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FILINVEST DEVELOPMENT

SEPTEMBER 2021

BEST UNDER A BILLION

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September 2021 | Volume 17 • Number 6

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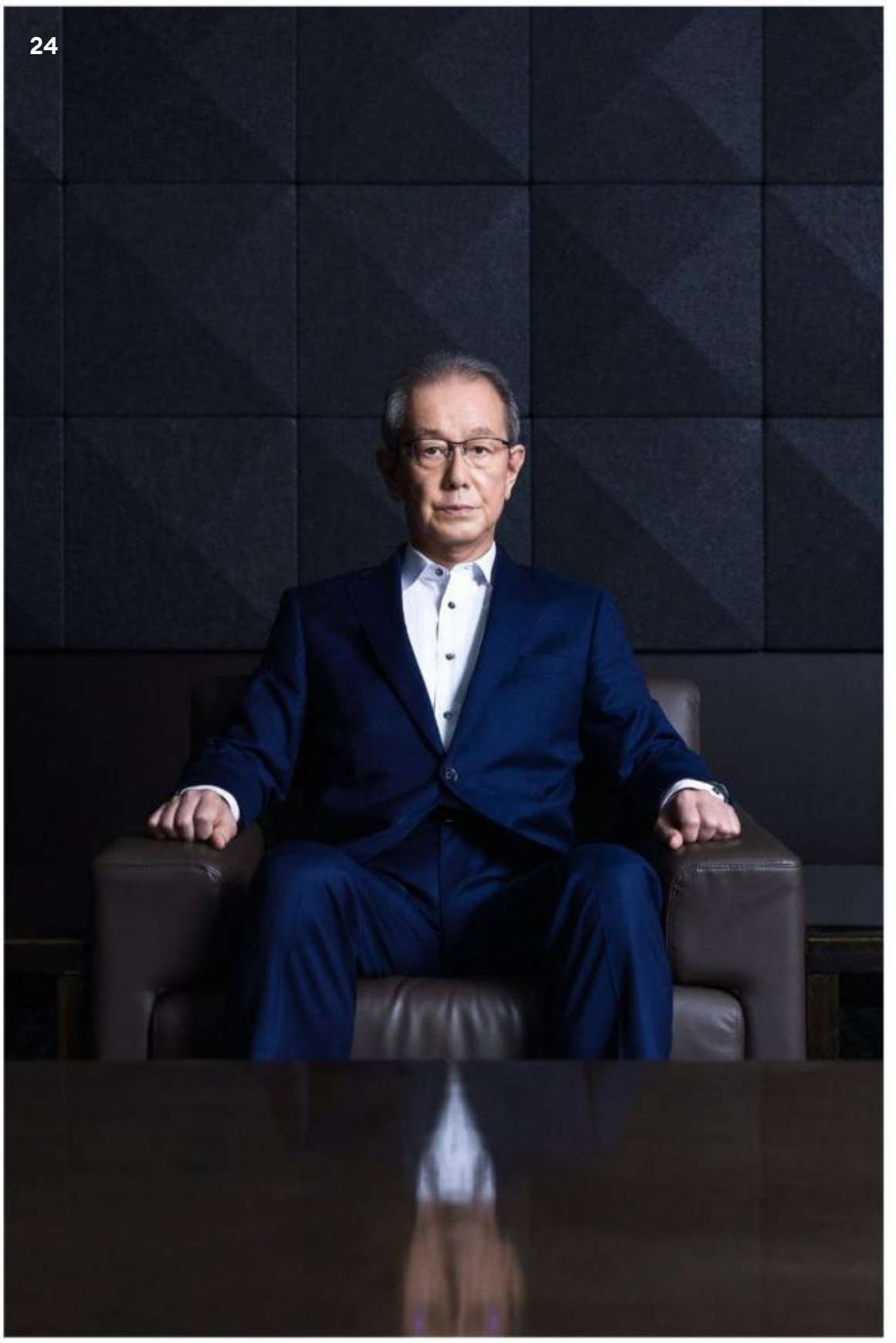

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SEPTEMBER 2021 — VOLUME 17 • NUMBER 6
FORBES ASIA (ISSN 1793 2181) is published monthly, except bimonthly in December/January, February/March and April/May. FORBES ASIA is printed at Times Printers in Singapore. Singapore MCI (P) 062/11/2020. Malaysia KDN PPS 1411/01/2013 (022902). All rights reserved. Title is protected through a trademark registered with the U.S. Patent & Trademark Office. FORBES ASIA is a trademark of FORBES ASIA. Copyright © 2013 FORBES ASIA.

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It isn't easy to succeed in the now, not knowing what's next to come in the current economic climate impacted by the pandemic, but there are those who have. We are proud to sponsor the inaugural Forbes Asia 100 to Watch, celebrating the achievements of these 100 successful small companies and start-ups on the rise that are making a positive impact in Asia-Pacific.

Selected companies will be invited to participate in the FedEx Small Business Grant Contest. One winning company will receive the top cash prize of US$30,000, and three other companies will receive special mention plus a US$13,000 cash prize.

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Transformers

This issue's cover story on Yasuo Takeuchi, the president and CEO of Japan's Olympus, provides an instructive lesson in how to transform an iconic company. When one of your markets is being disrupted, sometimes the best thing to do is disrupt yourself. Thus, the company jettisoned its storied but money-losing camera division, despite having built a global brand on this business. In its stead, Takeuchi has led an effort to remake the multinational into a pure-play medical technology company, which leverages off its optical expertise to dominate the global endoscopy market.

The move has resulted in improved financials, and investors gave their approval for these results with a sharp rise in the company's market value. One can see a similar process under way in the Philippines, as shown in that country's 50 Richest list. Some of the country's biggest companies—and helmed by its wealthiest citizens—are reinventing themselves as public companies or restructuring to list REITs, now allowed under new government regulations.

The result is that the Philippine Stock Exchange is second only to Thailand's bourse in the amount raised in IPOs in the past 12 months. This IPO boom has created new billionaires for the list, while other listees have gotten a boost to their net worth.

The feature on Josephine Gotianun-Yap of Filinvest Development delves into the efforts underway to redirect one of the Philippines' biggest companies towards new growth sources, including green energy investments. Gotianun-Yap has also joined her fellow Filipino tycoons to create a REIT, which just listed.

Next up, this issue has the annual Best Under A Billion list, which features 200 companies from across the Asia-Pacific region with revenue under $1 billion that have track records of exceptional corporate performance. Here too are old-line companies thriving from dramatic business pivots. Exhibit A: Kilpest India, an Indian agri-biotech company founded in 1972, took a risk to launch a Covid-19 PCR test, which won approval from the U.S. Food & Drug Administration for emergency use. Kilpest's India success with this test has driven up its profits and stock price.

Finally, columnist Rich Karlgaard examines the prospects for companies from China to build a high-tech ecosystem by 2025 that includes a homegrown semiconductor industry. Several major companies on the mainland, such as Huawei and SMIC, are the likely candidates to spearhead that plan, though Karlgaard notes they must close a wide gap with global rivals.

So despite the headwinds of the pandemic, some of Asia's corporations are taking actions more closely associated with startups. These firms are embracing change rather than avoiding it, and learning to reinvent themselves under entrepreneurial leadership. As the global community experiences an unprecedented tsunami of innovation and disruption, Asia's companies are dynamic contributors to this accelerating trend. As always, all comments welcome at editor@forbesasia.com.

JUSTIN DOEBELE
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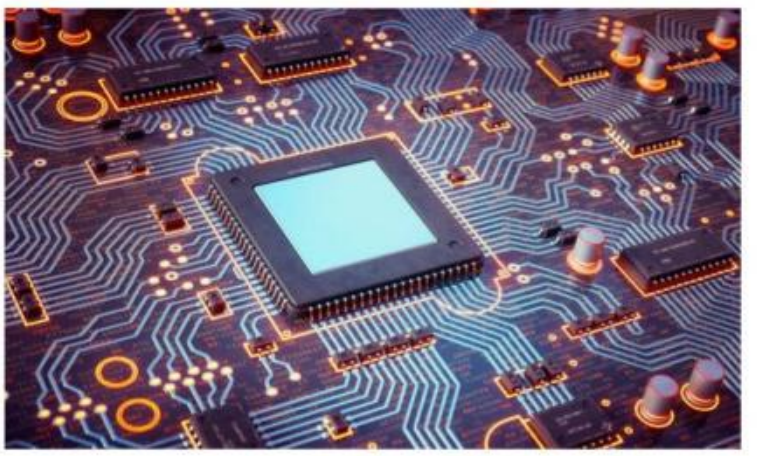
NOT MANY.

By **Rich Karlgaard**

China's Chip Hurdle



Last month this column—along with the world's capital markets—wondered why Beijing would hurt its own tech stars, such as Ant Financial, Didi Chuxing and TAL, with a barrage of new regulations. My thought was that President Xi Jinping was waving a red flag at China's tech talent: Turn your attention away from splashy consumer tech: online loans, ride shares, tutoring games and the like. Get busy on strategically core technologies, for example, semiconductors. Xi's bid for national self-sufficiency of at least 70% in critical tech by 2025 is bogged down by China's weakness in this most strategic of all technologies.

A bit of history. Fifty years ago this November, America's Intel laid the foundation of the digital era with the 4004, the world's first microprocessor. The project had started in 1969 as a partnership with Japan's Busicom, which had negotiated exclusive rights for the 4004 in calculators. Intel kept the rights for other uses, which by the end of the 1970s would come to include the personal computer. The rest, as they say, is history. Intel, which both designs and manufactures chips, has never given up its overall global sales lead and enjoys the advantages of global scale.

China gets semiconductors. It is the world's second-largest consumer of semiconductors, a bit behind the U.S. and will soon catch up. But mainland China is miles behind the U.S. when it comes to making advanced microprocessors, which power everything from giant server farms to the world's 5 billion mobile phones. Thus far, China's major role in the semiconductor world has been that of assembler and packager.

The absence of a mainland-based company from the top global semiconductor ranks is a strategic black hole for Beijing. Of the world's top 15 semiconductor companies by sales, eight are in the U.S. Two each are located in Europe, South Korea and Taiwan. Japan has one. Since semiconductors are the fourth-most traded product in the world (by value), behind crude oil, refined oil and cars, it is puzzling why China has not yet cracked the top 15. One assumes Xi knows this cannot stand if China is to achieve core technological independence by 2025.

Mainland China's semiconductor flagships are Shenzhen's Huawei in design and Shanghai's SMIC in contract manufacturing. Both compete on the world stage; neither has cracked the world's top 15 in semiconductor sales. (Huawei, of course, like Apple, derives most of its sales from mobile phones, not chips.) Huawei is a world-class company, but its ability to tap into markets comprising the majority of the global GDP was restricted by the former Trump administration's policies.

Thus SMIC is China's laggard in its race for core tech independence. As of 2020, SMIC's global share of contract chip manufacturing was only 4%, compared to Samsung's 18% and TSMC's 50% (and for advanced chip manufacturing even more dominant at 80%). Most analysts believe SMIC to be three to four years behind TSMC's technology. This gap has forced SMIC to compete more on a commodity level—cheap phones, appliances, cars and so on. What could bring SMIC into the top ranks? In a word, Huawei. The Shenzhen superstar has needed a top factory partner since Trump's actions in 2020 restricted Samsung and TSMC from fully serving Huawei.

China also will have to develop a world-class chip manufacturing equipment business. This is not trivial. Etching transistors onto silicon at 5 nanometer scale—a human hair width is around 90,000 nanometers—is a technological feat. Very few equipment companies can do it.

The investment needed to achieve Xi's dream of core tech independence, just in semiconductors, is estimated to cost between $1 trillion to $3 trillion. But reaching that goal will take more than just money. It will take trust in the scientists, engineers, bold thinkers and mavericks, along with experimentation and creative finance required to make it happen. It can't automatically happen by top-down command. Meanwhile, Intel, Samsung, TSMC and others are not sitting still.

Rich Karlgaard is editor at large at *Forbes*. As an author and global futurist, he has published several books, the latest of which is *Late Bloomers*, a groundbreaking exploration of what it means to be a late bloomer in a culture obsessed with SAT scores and early success. For his past columns and blogs visit our website at www.forbes.com/sites/richkarlgaard.

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PETRONAS: ONWARDS TO A SUSTAINABLE FUTURE

Being a progressive energy and solutions partner, PETRONAS helps enrich lives.

As a global energy and solutions partner, sustainability has always been at the forefront of PETRONAS' agenda. It deeply understands the need to spearhead efforts towards a sustainable future.

PETRONAS' sustainability journey began more than two decades ago with the integration of environmental, social and governance practices into its business and decision-making.

Driven by a clear agenda, PETRONAS strives to explore new opportunities and drive growth for the business, guided by the four sustainability lenses (see box). PETRONAS declared its aspiration to achieve net zero carbon emissions by 2050 in November 2020.

Cleaner, Renewable and New Energy

PETRONAS' sustainability journey sees more solutions being introduced as part of the strategies including its foray into the cleaner, renewable and new energy sector. In 2016, PETRONAS introduced its first Floating Liquefied Natural Gas (PFLNG SATU), a game changer which can process gas from offshore fields with depths of up to 200 meters. Their second PFLNG (PFLNG DUA), is the world's first deep-water floating LNG which is currently operating at water depths up to 1,500 meters. The PFLNG can transport offshore LNG without the need for pipelines, making this a more sustainable way of extracting and processing gas.

The journey continues through the acquisition of Amplus Energy Solutions (M+) in 2019, which has now successfully grown its total solar capacity in India and Malaysia to almost 1GW under operation and development.

Amplus solar farm in Karnataka, India.

While in the new energy space , PETRONAS has recently set its focus on producing hydrogen fuel—an efficient energy output that is sustainable, leveraging on technology for the production and transportation of hydrogen.

Behind The Scenes

PETRONAS' sustainable efforts are also aimed at protecting the environment. For example, it sponsors the Imbak Canyon Conservation Area in Sabah, which advocates research, reforestation, public education and the training of future stewards. Its gravity-based water systems—dubbed "Water for Life"—in Malaysia, Iraq and the Republic of South Sudan supply clean water to over 100,000 residents since 2013.

In the area of education for local communities, more than 31,000 students have benefited from various academic programs and training courses offered by Universiti Teknologi PETRONAS, Institut Teknologi Petroleum PETRONAS, and Akedemi Laut Malaysia.

PFLNG SATU processing gas from the Kebabangan Cluster field in Sabah, Malaysia.

PETRONAS' SUSTAINABILITY AGENDA

Continued Value Creation
To drive long term business value creation through responsible investments.

Safeguard the Environment
To reduce environmental impact by transitioning to lower carbon energy solutions and deploying innovative operations and technologies.

Positive Social Impact
To create positive alliances with the communities in places we operate by protecting and adding value to the well-being of employees, partners and the society.

Responsible Governance
To safeguard PETRONAS' commitment through strong governance mechanisms and ethical business practices.

End Goal

PETRONAS recognizes that the key to its sustainability agenda is to continue looking for new ways to strengthen regional cooperation and create the right ecosystem to promote a broader usage of energy from clean and sustainable sources. This is also why PETRONAS joined over 200 forward thinking companies as the newest member of the World Business Council for Sustainable Development in 2020.

As PETRONAS moves towards a sustainable future, it will continue to align its business strategies toward global sustainable energy trends. This will enable PETRONAS to meet the demands of the energy trilemma—defined as security, sustainability and affordability—in ways that will create positive social impact while safeguarding the environment. ■

PETRONAS

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By **Antoine Gara** and **Jason Bisnoff**

Photograph by **Jamel Toppin** for Forbes

Rich Suckers

Private equity funds are the greatest wealth builders ever invented on Wall Street. So why have the retail versions of the dealmakers' funds, peddled by MERRILL LYNCH and other brokers, performed so poorly?

Financial advisor and Talmudic scholar Kurt Stein is not just looking to right industry wrongs. He hopes for a whistleblower award from the SEC.

Former Merrill Lynch broker Kurt Stein vividly remembers the day in the spring of 2011 when the doors to the exclusive world of private equity seemed to swing wide open. Inside an ornate ballroom at Manhattan's Waldorf Astoria hotel, Stein and hundreds of his Merrill colleagues were wined and dined by Blackstone, the world's preeminent buyout firm. The pitch: Blackstone's vaunted deal machine was invincible, producing net returns north of 15% per year with an uncanny ability to avoid losses.

Here's how Blackstone's billionaire cofounder and CEO, Steven Schwarzman, explained his proposition to brokers in 2013: "We are a pair of safe hands. . . . Why would you invest in the products you normally do if you can make two to three times your money and have happier customers if you put them into our products?"

Now Stein, who has since resigned from Merrill and submitted documents to the SEC as a whistleblower, wishes those doors had remained firmly closed. Fast-forward ten years, and most of the clients Stein placed into private equity funds are sitting with annual returns of 10% or less,

AS STEIN SEES IT, THERE ARE TWO BIG PROBLEMS. FEES AND THE FINANCIAL ALCHEMY BEHIND INTERNAL RATES OF RETURN.

well below the 15% annually the S&P 500 has returned. Stein now believes these funds were misrepresented by wealth management firms and their private equity partners. (The SEC declined to comment.)

In retrospect it seems Schwarzman was only breaking bread with brokers because these salespeople represented the next big money pot. Private equity had already tapped the bigger money pools—pensions, endowments and sovereign wealth funds. These institutions have more than 20% of their assets in alternatives, compared to less than 5% for individual investors. With affluent households growing rapidly, financial advisors now control $8 trillion. Retail is the biggest driver of growth at $684 billion (assets) Blackstone today, pulling in almost $4 billion in new assets a month. This channel could nearly triple by 2028.

"You felt you were talking to the guys making the big money," recalls Stein, 54, an advisor, then based in New Jersey, whose typical client account is $3 million. "I remember thinking 'this will be a home run.'"

As soon as he was back in Jersey, Stein hit the phones. At first, he mostly put clients in a flagship real estate fund, Blackstone Real Estate Partners, and a mezzanine credit fund. Early returns were impressive, and Stein was ecstatic. Within three years, both funds showed "internal rates of return" of roughly 20%. Stein was soon investing with not just Blackstone but other PE shops including KKR, Carlyle Group and Lone Star.

He was not alone. One former Merrill heavy hitter says he put more than $1 billion of client assets in PE funds. "It's a scam," he says. "I'm not buying any of these funds anymore."

Returns have been lousy. Take Stein's experience with Blackstone's diversified offering, Total Alternatives Solution, known as BTAS 2014. It started out respectably, generating a return of 10.82%, after all fees, by the end of 2017; two years later, returns were 6.78%. Today, the net return is 5.18%, and the fund's biggest holding is struggling physician group Team Health.

As Stein sees it, there are two big problems.

Start with fees. Blackstone takes its customary 1.5% management fee and a 20% performance fee on returns above 6%. Then retail brokers like Stein take an additional 1%, despite the fact that they have nothing to do with the dealmaking. After that, there are "placement fees" which run as high as 2.5% of an investor's total capital commitment.

Says a spokesperson for Merrill's parent, Bank of America, "We clearly detail the fees related to such investments to ensure transparency."

The second problem is the financial alchemy behind internal rates of return. During Stein's indoctrination into the rarefied world of buyouts, he was introduced to a concept known as the "J-curve." This scholarly sounding theory posits that PE fund returns are depressed in early years because investors are charged fees on their capital commitment, which normally isn't fully invested until the fourth year of a 10-year fund. Then, like a J, returns are supposed to rise like a phoenix. But Stein says his clients' actual returns were more like an upside-down J.

Consider Blackstone real estate fund BREP, launched in 2012. It peaked at a net IRR of 20% in December 2015, including brokerage fees. As of May 2021, returns were just 10.3%. Or Blackstone's 2012 GSO Mezzanine Trust: The credit fund peaked in March 2015 at 23.3%, but as of February 2021 its IRR hovers around 6%. Carlyle's U.S. Equity Opportunity II has a net IRR of 2.62%. Other funds from Lone Star and KKR are worse. "There is no J-curve," Stein grunts.

A big reason for the inverted J? Leverage. These funds borrow in the early years, deferring capital calls and thus boosting rates of return, especially when an early investment is quickly flipped at a profit. It's like buying a house for 1% down and calculating returns before shelling out the remaining 19%.

Win or lose, those high reported early IRRs are a great marketing tool. The strategy behind Blackstone's Total Alternatives Solution VIII was pitched in June as having a 13.4% net IRR, far more than Stein says his clients have earned. To arrive at that return, Blackstone references seven BTAS funds with $7.8 billion in total assets. Two of those funds are from 2019 and 2020, carrying net IRRs of 42% and 100%, respectively. Neither fund has distributed capital to investors. (As of July, Blackstone's BTAS program was marked at 14.9% master fund IRRs, and BTAS 2014 had a 7.9% IRR. The funds are still active.)

"The IRR is high in the beginning because they're manipulating it to be high," says Brad Case, an economist who studies private equity. "Why does it come down over time? Because they run out of opportunities to keep manipulating it."

In a statement noting its 35-year track record of outperforming benchmarks, Blackstone insists, "Any suggestion that we overstated our performance or misled investors is completely false."

Now Blackstone and other buyout firms are eyeing investors with less money. In mid-2020, after lobbying the Trump administration, U.S. Labor Secretary Eugene Scalia, son of late Supreme Court Justice Antonin Scalia, approved private equity's inclusion in defined contribution plans. In other words, Blackstone and its private equity pals are coming to a 401(k) retirement plan for more Americans.

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200 BEST UNDER A BILLION

Despite the global spread of Covid-19, this year's annual Best Under A Billion list highlights the resilience of 200 publicly listed small and midsized companies in the Asia-Pacific region with sales under $1 billion. Their sound financial figures reflect how well these companies coped in the midst of a global pandemic. No surprise: Healthcare and pharmaceutical-related companies were standouts while tech and logistics firms linked to the global e-commerce boom also benefited. As proof of BUB companies' sustainable success, 42 were returnees from the previous year. This includes Taiwan's Aspeed, now on the list for a notable eight years in a row. We've highlighted eight companies from the list with businesses that helped alleviate the pandemic's effects.

EDITED BY **ARDIAN WIBISONO**

With reporting by John Kang, Danielle Keeton-Olsen, Zinnia Lee, Ramakrishnan Narayanan, Amit Prakash, James Simms and Yue Wang.

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
Adaptive Plasma Technology	Semiconductors	South Korea	**79**	**20**	**503**
AEM Holdings [3]	Electronic components	Singapore	**376**	**71**	**849**
AfreecaTV	Entertainment	South Korea	**167**	**32**	**1,434**
AgriPure Holdings	Food	Thailand	**63**	**10**	**259**
Alchip Technologies	Semiconductors	Taiwan	**240**	**28**	**1,528**
Alkyl Amines Chemicals	Chemicals	India	**167**	**40**	**2,892**
AlphaPolis	Publisher	Japan	**73**	**13**	**352**
Ample Electronic Technology	Electronic components	Taiwan	**41**	**5**	**137**
Amrutanjan Health Care	Traditional medicine	India	**45**	**8**	**266**
Appen	Software	Australia	**413**	**35**	**1,060**
Argosy Research	Electronic components	Taiwan	**88**	**21**	**326**
Arvida Group	Healthcare	New Zealand	**112**	**88**	**791**
Aspeed Technology [8]	Semiconductors	Taiwan	**104**	**34**	**2,697**
Astral Ltd.	Construction	India	**428**	**54**	**5,322**
Auras Technology [2]	Electronic components	Taiwan	**415**	**38**	**537**
Australian Ethical Investment [2]	Financial services	Australia	**33**	**6**	**699**
Avita Corp.	Healthcare	Taiwan	**88**	**18**	**75**
Axtel Industries	Manufacturing	India	**21**	**3**	**71**
Bajaj Healthcare	Pharmaceuticals	India	**89**	**11**	**166**
Bajaj Steel Industries	Machinery	India	**69**	**9**	**81**
Balaji Amines	Chemicals	India	**176**	**32**	**1,448**
BayCurrent Consulting	Consulting	Japan	**405**	**95**	**6,478**
Beijing Chunlizhengda Medical Instruments	Healthcare equipment	China	**134**	**41**	**975**
Benefit Japan	Telecom	Japan	**94**	**9**	**124**
Beta Drugs	Pharmaceuticals	India	**16**	**2**	**41**
Beximco Pharmaceuticals	Pharmaceuticals	Bangladesh	**302**	**41**	**1,002**
Bhansali Engineering Polymers	Chemicals	India	**174**	**45**	**416**
BPPL Holdings	Cleaning products	Sri Lanka	**18**	**3**	**29**
Caplin Point Laboratories	Pharmaceuticals	India	**143**	**33**	**855**
Carabao Group [2]	Food	Thailand	**551**	**113**	**4,153**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
CareNet	Education	Japan	**50**	**8**	**674**
Century Pacific Food	Food	Philippines	**974**	**78**	**1,792**
Chang Type Industrial	Manufacturing	Taiwan	**179**	**16**	**127**
Change Inc.	Education	Japan	**98**	**19**	**1,531**
CHIeru	Education	Japan	**38**	**3**	**93**
China Leon Inspection Holding	Inspection services	China	**83**	**7**	**120**
Chong Kun Dang Holdings	Pharmaceuticals	South Korea	**727**	**67**	**431**
Chongqing Zaisheng Technology	Personal products	China	**270**	**52**	**1,365**
Chularat Hospital [2]	Healthcare	Thailand	**174**	**28**	**1,332**
Codan	Technology	Australia	**233**	**43**	**2,213**
Comfort Gloves	Healthcare	Malaysia	**225**	**67**	**252**
Cybozu	Software	Japan	**147**	**13**	**1,111**
D&O Green Technologies	Semiconductors	Malaysia	**137**	**12**	**1,425**
Danawa [2]	Software	South Korea	**197**	**27**	**388**
Dancomech Holdings	Trading	Malaysia	**28**	**4**	**38**
Daytona Corp.	Automotive	Japan	**93**	**8**	**77**
Dolat Investments [2]	Financial services	India	**38**	**20**	**260**
Dong Hai of Ben Tre [2]	Paper & packaging	Vietnam	**124**	**17**	**270**
Double Standard Inc. [2]	Software	Japan	**42**	**7**	**320**
Drgem Corp.	Healthcare	South Korea	**90**	**17**	**127**
DSC Investment [2]	Financial services	South Korea	**17**	**20**	**126**
Dufu Technology	Manufacturing	Malaysia	**71**	**12**	**558**
Echo Marketing [2]	Media	South Korea	**150**	**45**	**682**
Eggriculture Foods [2]	Food	Singapore	**38**	**5**	**21**
Energy One [2]	Energy trading	Australia	**14**	**1**	**124**
Eoptolink Technology	Manufacturing	China	**288**	**71**	**3,092**
Exotic Food Thailand	Food	Thailand	**41**	**10**	**271**
Fibocom Wireless	Manufacturing	China	**396**	**41**	**3,444**
Fire Rock Holdings [3]	Software	China	**75**	**50**	**1,273**
Flat Glass Group	Glass products	China	**898**	**236**	**14,693**
FoundPac	Electronic components	Malaysia	**12**	**4**	**110**
Frontken [2]	Engineering services	Malaysia	**88**	**20**	**1,273**
G-bits Network Technology	Software	China	**395**	**152**	**4,715**
Genius Electronic Optical	Electronic components	Taiwan	**540**	**104**	**2,058**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

KILPEST INDIA

While its agrochemical business faced a tough year, sales of this India-based agri-biotech company were up 12% and net profit surged for the year to March, thanks to a real-time Covid-19 PCR detection kit developed by a subsidiary. Kilpest became the first Indian company to get approval from the Food & Drug Administration for emergency use of this kit in the U.S.

MEGA LIFESCIENCES

This Thailand-based pharmaceutical company's revenue grew 11% to $402 million in 2020 as demand for its dietary supplements, drugs and vitamins rose during the pandemic. Last year, the company acquired Futamed Pharmaceuticals, now renamed Mega Lifesciences Indonesia.

GETTY IMAGES (2)

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
Global Mixed-mode Technology	Semiconductors	Taiwan	**252**	**36**	**834**
Guangdong Kinlong Hardware Products	Construction machinery	China	**969**	**118**	**9,424**
Gufic Biosciences	Pharmaceuticals	India	**66**	**6**	**201**
H.G. Infra Engineering [2]	Construction	India	**351**	**32**	**464**
Hanmi Semiconductor	Semiconductors	South Korea	**218**	**42**	**1,529**
Hawkins Cookers	Consumer durables	India	**103**	**11**	**438**
Highnoon Laboratories	Pharmaceuticals	Pakistan	**66**	**9**	**143**
HiTech Group Australia	Consulting	Australia	**22**	**2**	**68**
Hithink Royal Flush Information Network	Software	China	**408**	**250**	**8,041**
HLE Glascoat	Machinery	India	**65**	**7**	**575**
Hunesion	Software	South Korea	**22**	**3**	**59**
Hycon Technology	Semiconductors	Taiwan	**39**	**7**	**173**
IGG	Games developer	Singapore	**704**	**270**	**1,212**
I'LL Inc.	Software	Japan	**117**	**11**	**368**
Infomedia [2]	Software	Australia	**63**	**12**	**448**
Integrated Research [2]	Software	Australia	**74**	**16**	**235**
International Games System [2]	Software	Taiwan	**286**	**116**	**2,007**
IOL Chemicals & Pharmaceuticals [2]	Chemicals	India	**265**	**60**	**508**
IPS	Telecom	Japan	**90**	**14**	**288**
IR Japan [2]	Consulting	Japan	**78**	**26**	**1,832**
Japan Elevator Service Holdings	Construction	Japan	**231**	**22**	**1,871**
Japan Living Warranty	Construction	Japan	**18**	**2**	**107**
Jiangshan Oupai Door Industry	Construction materials	China	**433**	**62**	**1,215**
Jiangyin Hengrun Heavy Industries	Manufacturing	China	**344**	**67**	**884**
Jyoti Resins & Adhesives	Chemicals	India	**14**	**2**	**37**
Kanamic Network	Software	Japan	**17**	**4**	**266**
Keshun Waterproof Technology	Chemicals	China	**898**	**129**	**2,898**
Keystone Microtech	Electronic components	Taiwan	**42**	**11**	**306**
Khang Dien House Trading & Investment	Construction	Vietnam	**195**	**50**	**1,104**
Kilpest India	Chemicals	India	**30**	**13**	**50**
KM	Healthcare	South Korea	**159**	**28**	**92**
Kolmar Korea	Personal products	South Korea	**572**	**91**	**429**
Lalin Property	Real estate	Thailand	**177**	**43**	**254**
Laurus Labs	Pharmaceuticals	India	**644**	**132**	**5,078**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

OPTIM

Working from home during the pandemic spurred demand for Optim's remote working tools. As a result, the Japanese company's net profit rocketed tenfold to $12 million for the year ended in March. Aside from its telework-support software, its AI camera gained traction last year, used for tracking areas of congestion like staff canteens.

PRODIA WIDYAHUSADA

This clinical laboratory company's 2020 net profit grew 28% to $18 million. The company introduced new services last year such as drive-in services and teleconsultation, and it is the first private company in Indonesia to use an automated system to help the government increase Covid-19 PCR testing.

GETTY IMAGES (2)

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
Luxpia	Electronics	South Korea	**19**	**3**	**32**
Mark Dynamics Indonesia	Manufacturing	Indonesia	**39**	**10**	**266**
Mastek	Software	India	**232**	**28**	**798**
Mediana	Healthcare	South Korea	**57**	**10**	**104**
Medikaloka Hermina [2]	Healthcare	Indonesia	**304**	**33**	**1,201**
Medtecs International	Healthcare	Taiwan	**400**	**132**	**328**
Mega Lifesciences	Pharmaceuticals	Thailand	**402**	**45**	**1,052**
Minwise [2]	Software	South Korea	**145**	**17**	**254**
Mitra Keluarga	Healthcare	Indonesia	**235**	**58**	**2,278**
Mr. Blue	Entertainment	South Korea	**68**	**10**	**215**
Neojapan	Software	Japan	**50**	**6**	**186**
Netwealth Group [2]	Financial services	Australia	**81**	**29**	**2,722**
Newtree Co.	Pharmaceuticals	South Korea	**161**	**16**	**247**
NGL Fine-Chem	Chemicals	India	**35**	**8**	**249**
Ningbo Orient Wires & Cables	Wires & cables	China	**728**	**129**	**2,440**
Novarex [2]	Pharmaceuticals	South Korea	**189**	**21**	**369**
Novatech	Manufacturing	South Korea	**58**	**19**	**330**
Optim	Software	Japan	**71**	**12**	**945**
Ovctek China	Medical equipment	China	**125**	**63**	**11,715**
Parade Technologies	Semiconductors	Taiwan	**519**	**119**	**4,814**
Park Systems [2]	Manufacturing	South Korea	**60**	**8**	**731**
PCL Technologies	Electronic components	Taiwan	**113**	**19**	**202**
Persistent Systems	Software	India	**564**	**61**	**3,184**
PharmaBlock Sciences	Pharmaceuticals	China	**147**	**27**	**5,457**
PI Industries	Chemicals	India	**617**	**99**	**6,291**
Pioneer Motor	Electronics	Thailand	**25**	**3**	**71**
Pipedo HD	Software	Japan	**62**	**12**	**163**
Pksha Technology	Software	Japan	**69**	**16**	**541**
PNC Process Systems	Manufacturing	China	**201**	**38**	**3,180**
Prima Marine	Transportation	Thailand	**189**	**49**	**495**
Pro Medicus [2]	Healthcare	Australia	**38**	**15**	**4,208**
Prodia Widyahusada	Healthcare	Indonesia	**129**	**18**	**494**
Prored Partners [2]	Financial services	Japan	**30**	**8**	**245**
Proya Cosmetics	Personal products	China	**539**	**69**	**5,717**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

RIVERSTONE HOLDINGS

This Singapore-based company's 2020 revenue climbed 85% to an all-time high of $435 million, based on robust sales of its gloves, used in healthcare, tech and other sectors. Cleanroom glove sales grew 65% year-on-year, and medical glove sales increased 16% as Covid-19 boosted demand.

VINCENT MEDICAL HOLDINGS

Hong Kong-based respiratory device maker's 2020 revenue doubled to $149 million as sales from its respiratory business soared by 286% due to pandemic demand. Last year, the company tripled its production capacity in two months and doubled its workforce.

GETTY IMAGES (2)

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
Qingdao Hiron Commercial Cold Chain	Consumer durables	China	**271**	**39**	**1,545**
Rakus	Software	Japan	**145**	**28**	**5,386**
Ramelius Resources	Mining	Australia	**309**	**76**	**908**
Renata [2]	Pharmaceuticals	Bangladesh	**291**	**47**	**1,629**
Revenue Group [2]	Software	Malaysia	**18**	**2**	**208**
RFM Corp.	Food	Philippines	**317**	**26**	**301**
RichWave Technology	Semiconductors	Taiwan	**182**	**29**	**860**
Riverstone Holdings Ltd.	Healthcare	Singapore	**435**	**154**	**1,378**
RS Group	Media	Thailand	**121**	**17**	**528**
Sahyadri Industries	Building materials	India	**64**	**8**	**94**
Samurai 2K Aerosol	Construction materials	Singapore	**27**	**4**	**87**
Scientex [2]	Plastic products	Malaysia	**834**	**92**	**1,524**
Sea Sonic Electronics	Electronic components	Taiwan	**132**	**21**	**279**
Seegene	Pharmaceuticals	South Korea	**954**	**426**	**3,306**
Senba Sensing Technology	Technology	China	**49**	**23**	**606**
SG Micro	Semiconductors	China	**173**	**42**	**12,798**
Shanghai Weaver Network	Software	China	**214**	**33**	**3,065**
Share India Securities	Financial services	India	**61**	**11**	**230**
Sheng Ye Capital	Financial services	China	**97**	**48**	**1,181**
Shenzhen Topband	Electronics	China	**802**	**77**	**3,365**
Sido Muncul [2]	Traditional medicine	Indonesia	**229**	**64**	**1,669**
Silver Lake Resources	Mining	Australia	**377**	**172**	**874**
Sonix Technology	Semiconductors	Taiwan	**182**	**35**	**575**
Spigen Korea	Manufacturing	South Korea	**342**	**45**	**286**
S-Pool	Outsourcing	Japan	**196**	**15**	**639**
Square Pharmaceuticals [2]	Pharmaceuticals	Bangladesh	**527**	**157**	**2,417**
Strike Co. [2]	Consulting	Japan	**64**	**20**	**666**
SuRaLa Net	Education	Japan	**15**	**3**	**103**
Suzhou TFC Optical Communication	Manufacturing	China	**125**	**40**	**1,651**
Systems Ltd. [2]	Software	Pakistan	**61**	**14**	**531**
TaiDoc Technology	Healthcare equipment	Taiwan	**200**	**52**	**714**
Thaitheparos	Food	Thailand	**94**	**17**	**337**
Thantawan Industry	Plastic products	Thailand	**102**	**11**	**86**
Thermaltake Technology	Electronic components	Taiwan	**178**	**16**	**125**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

WISETECH GLOBAL

This Australia-based logistics software developer saw a 23% revenue increase in 2020 to $288 million as the logistics industry got a boost from pandemic. The company's logistics platform is used by top global freight forwarders such as DHL Global Forwarding and Yusen Logistics.

WUXI BIOLOGICS

China's WuXi Biologics' 2020 revenue soared 41% to $813 million as it expanded capacity to develop new treatments and vaccines for Covid-19. Last year, its vaccine manufacturing business signed contracts valued at over $3.2 billion.

GETTY IMAGES (2)

COMPANY	INDUSTRY	COUNTRY/ TERRITORY	SALES	NET INCOME	MARKET VALUE
Thong Guan Industries	Plastic products	Malaysia	**229**	**18**	**220**
Thunder Software Technology	Software	China	**380**	**64**	**10,591**
TQM Corp.	Insurance	Thailand	**100**	**22**	**1,021**
Transart Graphics	Trading	Taiwan	**47**	**28**	**188**
Transcom Inc. [2]	Semiconductors	Taiwan	**24**	**6**	**279**
Tri Chemical Laboratories	Chemicals	Japan	**92**	**32**	**975**
UG Healthcare	Healthcare	Malaysia	**104**	**10**	**259**
Union Gas Holdings [2]	Energy	Singapore	**62**	**10**	**197**
United Paper	Paper products	Thailand	**114**	**32**	**384**
Universal Inc.	Personal products	Taiwan	**138**	**67**	**165**
V-Guard Industries	Electronics	India	**367**	**27**	**1,487**
VIA Technologies	Semiconductors	Taiwan	**221**	**160**	**918**
Vincent Medical Holdings	Healthcare	Hong Kong	**149**	**28**	**102**
Vita Life Sciences	Pharmaceuticals	Australia	**32**	**4**	**43**
Vitrox	Electronic components	Malaysia	**112**	**25**	**2,113**
Wantedly	Software	Japan	**29**	**2**	**206**
Welbe [2]	Healthcare	Japan	**77**	**14**	**333**
WISE iTech	Software	South Korea	**21**	**3**	**81**
Wisetech Global	Software	Australia	**288**	**108**	**8,099**
Worldex Industry & Trading	Semiconductors	South Korea	**132**	**18**	**345**
Wuhan Easy Diagnosis Biomedicine	Medical equipment	China	**138**	**68**	**1,140**
WuXi Biologics [2]	Pharmaceuticals	China	**813**	**245**	**65,439**
Wuxi Shangji Automation	Manufacturing	China	**435**	**77**	**11,636**
Xin Yuan Enterprises Group	Transportation	China	**56**	**9**	**192**
Yantai Eddie Precision Machinery	Construction machinery	China	**324**	**75**	**5,639**
Yijiahe Technology	Robotics	China	**144**	**49**	**1,924**
YMT Co. [2]	Chemicals	South Korea	**96**	**12**	**288**
Yuan High-Tech Development	Electronic components	Taiwan	**92**	**21**	**178**
Zhejiang Dali Technology	Manufacturing	China	**157**	**57**	**2,496**
Zhejiang Jiecang Linear Motion Technology	Manufacturing	China	**269**	**59**	**2,919**
Zhejiang Weiming Environment Protection	Waste management	China	**448**	**182**	**5,209**
Zhongfu Information	Software	China	**142**	**35**	**1,354**
Zhuzhou Hongda Electronics	Electronic components	China	**200**	**70**	**5,441**
ZillTek Technology [2]	Semiconductors	Taiwan	**64**	**10**	**571**

[x] Number of consecutive years on the list, including this year. ☐ Returnee

ALL VALUES IN $ MILLIONS

DATA AS OF AUG. 12, 2021
SOURCES: FACTSET, FORBES ASIA

METHODOLOGY

This list is meant to identify companies with long-term sustainable performance across a variety of metrics. From a universe of 20,000 publicly traded companies in the Asia-Pacific region with annual revenue above $10 million and below $1 billion, only these 200 companies were selected. The companies on this list, which is unranked, were selected based on a composite score that incorporated their overall track record in measures such as debt, sales and earnings-per-share growth over both the most recent fiscal one- and three-year periods, and the strongest one- and five-year average returns on equity. Aside from quantitative criteria, qualitative screens were used as well, such as excluding companies with serious governance issues, questionable accounting, environmental concerns, management issues or legal troubles. State-controlled and subsidiaries of larger companies were also excluded. The criteria also ensured a geographic diversity of companies from across the region. The list uses full-year annual results, based on the latest publicly available figures as of Aug. 12, 2021 compiled by FactSet. All other research was done by *Forbes Asia*. The editors reserve the right to amend or remove any data or companies in light of new information after the list's release.

BEXIMCO:

LEADING THE WAY TO SUSTAINABLE FASHION

Bangladesh's leading textiles and apparels manufacturer breaks new ground in the sustainability space.

With climate change seen as the most pressing global challenge over the next decade, more consumers are rewarding businesses that place sustainability at the top of their corporate agenda.

This scrutiny has been especially heavy in the textiles industry, which is traditionally seen as a major contributor to global warming. The sector emits an estimated 1.2 billion tonnes of CO2 equivalent per year, surpassing emissions from airlines and maritime industries combined.

Against this backdrop, Bangladesh's Beximco has emerged as a global leader in sustainable fashion manufacturing. Founded 26 years ago, the company counts Amazon, Bershka, Marks & Spencer, Michael Kors, Pull & Bear, Target and Zara among its customers.

Amid rising demand for ethically-produced clothes, the company has put sustainability at the heart of its operations by employing a range of advanced manufacturing and supply chain management solutions—from using recycled materials to adopting an on demand manufacturing model—to meet the changing needs of its customers.

With its investments in sustainable and financially viable projects, Beximco is at the forefront of the eco fashion trend. At the same time, it also supports the production of garments that are affordable, durable, comfortable and aesthetically appealing to the customer.

"Every single brand and retailer that we work with has told us that sustainable manufacturing is an absolute necessity going forward," says Syed Naved Husain, Group Director and CEO of Beximco. "They've made it clear that vendors who cannot supply ethical and sustainable clothing will eventually have a very limited role in this industry."

The Covid-19 pandemic has accelerated the shift towards sustainable products. A survey conducted by McKinsey in April 2020 showed that some 67% of consumers consider the use of sustainable materials to be an important factor when making purchases.

"We have some really exciting and revolutionary plans that will reduce the time, energy and effort to bring products to market and at the same time ensure the welfare of our communities and value chain partners."

— A. S. F. RAHMAN, GROUP CHAIRMAN OF BEXIMCO

Integrated Value Chain

Beximco's achievements in sustainable production is also helping Bangladesh shed its image as a low cost manufacturing hub, and leading the country's progress to integrate into more important global value chains.

"Beximco recognizes that the traditional approach to textile and garment production is no longer tenable," says A. S. F. Rahman, Group Chairman of Beximco. "Integrating new technologies, embracing workplace innovations, adopting sustainable efficiencies are but a few of the critical changes that must be made to meet the changing demands of customers and markets."

Today, the Dhaka-based company is considered one of the most prominent eco-friendly fashion manufacturers in the region. "We are proud to have made significant advances and progress in the area of sustainability," says Rahman, "We have some really exciting and revolutionary plans that will reduce the time, energy and effort to bring products to market and at the same time ensure the welfare of our communities and value chain partners."

Recycling With Recover

Recycling waste materials to manufacture high quality yarns is at the core of Beximco's sustainability initiatives. Beximco has partnered with Recover Textile Systems—a Spanish recycling technology company that specialises in turning textile waste into premium fibers—to become the world's largest collector and recycler of textile waste and a specialized spinner of high quality recycled yarn.

Recover collects and sorts textile waste from around the world to produce new

fibers that contain recycled cotton, blended with other recycled materials such as polyester from plastic water bottles. The high percentage of cotton means that such yarn can be used in the production of high-end textiles.

The results are impressive. Recover's process score is 1 on the Higg Index—the best possible score on the industry standard for measuring environmental sustainability. In comparison, garments made from conventional cotton have a Higg score of around 70, while organic cotton has a score of around 45.

"All products made out of Recover textiles can be recycled at the end of their lives, returning into the system for a new production loop," says Husain.

Sustainable Washing

Beximco is also pioneering the use of sustainable washing processes that are not only more friendly to the environment, but able to achieve a look and feel that matches consumers' preferences, while remaining cost competitive.

The conventional washing process for denim fabrics uses large amounts of fresh water, chemicals and energy, as well as produces waste and downstream effluents. To address these issues, Beximco collaborated with leading sustainability tech players such as Jeanologia and Tonello to modify the washing process.

Beximco adopted Jeanologia's 5.0 laundry technologies such as ozone to replace bleach, lasers to replace chemicals and smart foam to replace water to produce jeans. As a result, the company's fresh water usage declined to a mere 1 liter per garment from 70 liters using conventional washing methods. That results to savings of as much as 900 million gallons of water per year.

On Demand Manufacturing

In another effort to eliminate waste, Beximco is working with e-commerce giant Amazon to implement an on demand model of manufacturing that's more economical and sustainable.

While traditional clothing manufacturing is done months in advance of sales, an on demand product is only made after the sale is booked. The product is then shipped in just a few days. As a result, fashion brands will no longer have costly inventories to dispose of at the end of each season.

"In an on demand model, Beximco's customers do not need to order thousands of something that they may never sell," says Husain. "There's no inventory, no fabric wastage and no warehousing."

With on demand manufacturing raising the pressure to deliver products under a constrained timeline, Beximco has worked to optimize every process to speed up production without sacrificing quality.

Higher Efficiency Cuts Waste

Other sustainability projects Beximco has undertaken are aimed at increasing the company's productivity and reducing waste by updating its technology and equipment.

For instance, the company upgraded its effluent treatment plant with new technology from the U.S. That's necessary to protect the environment as effluent treatment prevents the discharge of hazardous substances that can contaminate ground water and cause illnesses and other issues.

Beximco's commitment to sustainability is also evident at its headquarters in Beximco Industrial Park—a green campus spread across 400 acres (1,600 square kilometers) in Gazipur, an industrial district north of Dhaka. Local residents call the campus the "Lungs of Gazipur" since it's home to over 100,000 trees and an organic farm. The entire park has been awarded LEED Green certification by the U.S. Green Building Council.

The company's numerous sustainability efforts are one of the key measures of success that are considered by the company. "The role of sustainability is a fundamental KPI we have defined linked to long term success," says Rahman. "It should not only be measured from an economic dimension but from a social and environmental one in terms of the well-being of people and the health of our planet."

BEXIMCO
Textiles & Apparel Division

To find out more
www.beximco.com

GROWTH PIVOT

CEO YASUO TAKEUCHI IS LEADING OLYMPUS' TRANSFORMATION INTO A MEDICAL TECHNOLOGY COMPANY AFTER SELLING OFF ITS LAUDED, BUT MONEY-LOSING, CAMERA BUSINESS.

BY **JAMES SIMMS**

PHOTOGRAPHS BY **SHUNICHI ODA** FOR FORBES ASIA

Japan's Olympus Corp. is synonymous with cameras.

From its earliest camera in 1936, Olympus built a reputation for quality and innovation, such as its 1971 model 35DC, the world's first camera with an automatic flash. Yet that storied legacy came to an end in January, when Olympus finalized the sale of its camera and voice recorder businesses to Tokyo-based private equity firm Japan Industrial Partners for an undisclosed amount. "I have [had] a long-time ambition to really change this company," says president and CEO Yasuo Takeuchi in an interview at the company's Tokyo headquarters.

It was a bold shedding of a signature business built up over eight decades. Without cameras, what's next for Olympus? Takeuchi's answer: "We have a very good business on the medical side." Takeuchi is now overseeing Olympus' most extensive corporate makeover in its 102-year history, with the aim to create a pure-play medical technology (medtech) giant.

This pivot takes Olympus back to its roots. While renowned for its cameras, Olympus has a long and parallel history in medical technology, using its optical expertise to make microscopes and endoscopes. In fact, the first product released by Olympus was a microscope, launched just six months after the company's founding in 1919. Then came endoscopes—Olympus created in 1950 what it dubbed a "gastrocamera," a device, while rudimentary, laid the basis for modern endoscopes.

Building on that expertise, Olympus says it is the world's largest maker of gastrointestinal endoscopes, commanding 70% of the $3.3 billion global market for this technology. In the last fiscal year that included cameras (ended March 2020), the company's two medtech divisions contributed 80% of ¥797 billion ($7.3 billion) in total revenues. The imaging division, which holds cameras, represented just 6% in sales and lost over $1 billion over the previous decade. Now that Takeuchi has jettisoned cameras, the microscope division may be next—as it will be transferred into a wholly owned subsidiary in 2022. All told, Takeuchi is on track to complete Olympus' realignment to a company focused on endoscopes, therapeutic treatments and surgical technologies by the end of next year.

OCT 1919

Founded under name Takachiho Seisakusho.

MAR 1920

Launch of first microscope, Asahi.

MAY 1948

Launch of first 35mm camera, Olympus 35 I.

JAN 1949

Company renamed Olympus Optical Co., Ltd.

1900s - 1930s | 1940s - 1960s

FEB 1921

Olympus name registered as a trademark.

OCT 1936

Launch of first camera, Semi-Olympus I.

NOV 1950

Development of the gastrocamera, precursor of modern endoscopes.

JUN 1969

Launch of Zuiko Pearlcoder, world's first microcassette tape recorder.

The reason for this transformation is simple—smartphone cameras have decimated the consumer camera market, negating demand for stand-alone cameras. As for microscopes, now that imaging is gone, this division has become the company's smallest business, representing 13% of total ¥731 billion in revenues in the latest fiscal year (ended March 31).

Takeuchi, 64, has followed a tradition of many Japanese to pursue lifetime employment in a single company. He joined Olympus in 1980 as a fresh 23-year-old business graduate from Japan's Chuo University. He rose up through the ranks, spending 16 years outside Japan, helping run Olympus' operations in Europe and the U.S. He then returned to Japan in 2015 to head the corporate management office, becoming chief financial officer a year later. From there he moved into

COURTESY OF OLYMPUS

SHARP FOCUS

A BRIEF HISTORY OF OLYMPUS' CORPORATE MILESTONES AND NOTABLE PRODUCTS.

APR 1971

Launch of 35DC, world's first camera with an automatic flash.

MAY 1983

Launch of AH-2, world's first microscope with autofocus lens.

OCT 2003

Company renamed Olympus Corp.

MAY 2018

ValueAct Capital takes stake in Olympus.

JUN 2020

Sale of camera business initiated.

JAN 2021

Sale of camera business completed.

1970s | 1980s - 1990s | 2000s | 2010s - 2020s

JUL 1972

Launch of OM-1, world's smallest and lightest 35mm single-lens reflex (SLR) camera.

MAR 1977

Olympus Camera Corp. founded in the U.S.

MAR 1991

Launch of Mju, world's smallest and lightest compact camera.

OCT 1996

Launch of Camedia C-800L and C-400L, company's first digital cameras.

NOV 2007

Launch of E-3, digital SLR camera with world's fastest autofocus.

JAN 2019

"Transform Olympus" plan unveiled.

APR 2019

Yasuo Takeuchi becomes CEO.

JUN 2019

ValueAct takes two board seats.

OCT 2019

Company's 100th anniversary

JAN 2021

ValueAct cuts stake from 5% to 4%.

Source: Olympus Corp., regulatory filings

Olympus says it is the world's largest maker of gastrointestinal endscopes, commanding 70% of the $3.3 billion global market.

the CEO spot in April 2019—taking the post just months before the 100th anniversary of the company's founding in October 1919. Now his challenge will be to lead Olympus into its second century, helming a company much different from the one at which he spent four decades.

The results of Olympus' restructuring are bearing fruit. Since Takeuchi unveiled the company's "Transform Olympus" restructuring plan in January 2019, its Tokyo-listed stock has doubled to recent levels around ¥2,200. In the first quarter of the current financial year that began April 1, revenue jumped 40% from a year earlier to ¥191.5 billion ($1.8 billion). Olympus swung to an ¥18.7 billion net profit from a ¥2.7 billion loss a year earlier, prompting the management to forecast a full-year profit of ¥101 billion—which, if achieved, would be the largest in its history.

While the pandemic had little effect on Olympus' restructuring process, it did hurt demand for its medical equipment amid slowing economic growth in many of its markets and people putting off non-emergency medical procedures like checkups (its products aren't used in treating Covid-19). Olympus now sees signs of rebound. In the fiscal year through March, "we faced unprec-

edented challenges caused by Covid-19. Despite these, revenue recovered significantly toward the second half of the year," said Takeuchi in a conference call in May with analysts.

The catalyst for Olympus' restructuring is said to have come from U.S. activist fund ValueAct Capital, a San Francisco-based firm with a reported $16 billion under management and which has initiated actions against companies such as Microsoft and Rolls-Royce. When ValueAct emerged as the owner of a 5% stake in 2018, alarm bells went off at Olympus. In response, the company hired consultants who advised Takeuchi, then chief financial officer, not to talk to the hedge fund. Takeuchi balked at that advice. "I felt instinctively that they might be able to become a very good partner," he says.

Ignoring the consultants, Takeuchi became the company's liaison with ValueAct. According to a media report, ValueAct in December 2018 threatened to call an extraordinary shareholder meeting to replace the directors unless the company inducted three non-Japanese onto its board. While the fund at the time denied making this threat, in January 2019 Olympus announced ValueAct partner Robert Hale would sit on its board and be joined by ValueAct advisor Jimmy Beasley. Today they are two of the three Olympus directors who aren't Japanese nationals. (ValueAct declined to comment for this article.)

Takeuchi downplays questions about external pressure, saying that ValueAct's advice complemented the blueprint that he had started hammering out about five years ago with other executives, including the former CEO Hiroyuki Sasa. "I don't think that's exactly true," he says, when asked about pressure for a board revamp. But if there was any nuance like that, he says, it was at the beginning of the relationship. "They didn't know who we were, how we were going to manage this company and how we [would] react to their approaches," he says. In January 2021, two years after Olympus announced its transformation plan, the fund sold down its investment. It now holds a 4% stake.

Masahiro Nakanomyo, a Tokyo-based analyst at U.S. financial group Jefferies, feels the changes would have occurred even without ValueAct because Takeuchi had already decided to focus on the medical business, unlike his predecessors who were more cautious in letting go of the legacy camera business. "Even if there was no *gaiatsu* [foreign pressure], they would have done the spinoff of the camera business," Nakanomyo says. "What Takeuchi-san and ValueAct were thinking was in the same direction, so there's no conflict."

Takeuchi also instituted board changes, increasing the number of outside directors to nine out of 12 from six in the previous 11-member board, and setting up committees for nomination, compensation and compliance chaired by an external director. The "Transform Olympus" drive also led to the creation of a five-member global executive committee headed by Takeuchi and including Stefan Kaufmann, chief administrative officer for Olympus. A German citizen who has worked at Olympus since 2003, Kaufmann has been given responsibility to oversee the implementation of the plan.

Takeuchi has also streamlined decision-making. Previously, any major corporate decision could involve as many as 15 people, including directors and senior executives, causing bottlenecks and delays in getting things done. Take the company's X1 endoscope launched last year. The product took eight years to develop, double the time taken by industry rivals to create new endoscopes. Eight years is too long, Kaufmann says.

But now more authority is delegated to product and divisional heads, according to Takeuchi. Instead of overseas executives having to route decisions through a counterpart in Japan, divi-

Since Takeuchi unveiled the company's "Transform Olympus" restructuring plan in January 2019, its Tokyo-listed stock has doubled.

Kaufmann *(left)* says of the restructuring under Takeuchi: "We now have a chance to focus much more on becoming the leading global medtech company that we want to be."

sions are now organized by function rather than regions. "This has improved agility by multiple times," says Kaufmann. Olympus also encourages a "two in a box" decision-making process that teams up one Japanese and one foreign national, says chief operating officer Nacho Abia, who hails from Spain. He is based not in Tokyo but Marlborough, Massachusetts. "The quality of the decisions was much better than before," he says.

Another change is in the research and development process. Rather than focus just on in-house research, says Kaufmann, the company is more open to acquisitions to speed up development—and has made a string of purchases in the last few years, including firms in France, Israel and the U.S.

With the restructuring, more analysts have upgraded their ratings. Vaccination progress in the U.S., Europe and China is leading to a sharp recovery in medical equipment sales, wrote Daiwa Securities analyst Tomoko Yoshihara in a May note. The Tokyo-based brokerage expects Olympus' net profit to climb to ¥143 billion in the year ending March 2025, up 42% from the company's forecast for the current fiscal year, on nearly ¥959 billion revenue. "As it continues to pursue business model improvements through the 'Transform Olympus' plan, the firm should be able to achieve sustained improvement in profitability going forward," she wrote.

China is also a source of new demand and could soon displace Europe as the company's second-largest market (North America remains its largest). "China has been growing by more than double digits in the past several years and that will continue," Takeuchi says. "A country like India, like many Asian countries that have big populations, is totally underdeveloped" in terms of healthcare and as a market, he adds.

Kaufmann offers his personal perspective on the company's evolution: "We now have a chance to focus much more on becoming the leading global medtech company that we want to be."

Olympus has a long history in medical technology, using its optical expertise to make microscopes and endoscopes.

COURTESY OF OLYMPUS

THAILAND: RISING TO THE CHALLENGE

Thailand has weathered its fair share of impacts—economic and otherwise—over the past quarter century, but the country has repeatedly proved its resilience during challenging times as well as its ability to re-emerge into a position of strength.

The pandemic has impacted countries all over the world, and each nation has been faced with its own unique challenges across various sectors. In Thailand, the tourism industry, which usually represents approximately 20% of the country's GDP, has been hit particularly hard.

Goods and services exports, another of the Thai economy's cornerstones at about 60% of GDP in 2019, was also significantly affected initially. However, the sector has since recovered, spurred by the weakest baht level in three years, to achieve 43.8% year-on-year growth in 2021—the largest increase in 11 years, according to the Kasikorn Bank Research Center.

In terms of direct foreign investment, supply chain disruptions brought on by the pandemic have encouraged foreign investors to move from China-centric to more regionalized production, and Kasikorn expects inflows to Thailand to increase by 0.7% to 0.8% from 2021 to 2022.

Moreover, in July, the Asian Development Bank estimated that Thailand's GDP will grow by 3% in 2021 and 4.5% in 2022, so the outlook is improving as the world begins to see light at the end of the pandemic tunnel.

Despite the headwinds of the past two years, some sectors and companies have continued to fulfill their growth ambitions, as this special supplement highlights.

The German digital security company cyan recently chose Thailand as their first step in entering the Asian market, forming a partnership with Thailand's leading mobile network operator to provide cybersecurity for mobile users.

Thailand's PTT Global Chemical, meanwhile, has pressed forward with its global expansion, acquiring Germany's Allnex Holding in a landmark €4 billion (US$4.75 billion) deal that significantly expands the state-owned company's international reach, as well as its production and product development capabilities.

After a period of global gloom, it seems that a new, and hopefully improved, normal is emerging. Mass vaccination is key to winning the battle against Covid-19, and Thailand is striving to achieve this despite some initial difficulties. As of late August, medical authorities in Thailand had administered more than 28 million doses of the vaccine, and as the supply increases dramatically in the last four months of 2021, the country should be able to reach its goal of vaccinating more than half of its population by the end of the year.

In fact, Thailand's well developed sense of community served the country well in minimizing the impact of Covid-19 in the first year of the pandemic, bringing the infection rate down to less than 10 per day for more than three months in 2020. Despite the recent uptick in third wave infections, Thailand is ready and able to rise to the challenge, and to step forward confidently into post-pandemic prosperity.

A LANDMARK DEAL

With its €4 billion (US$4.75 billion) acquisition of Europe's Allnex Holding GmbH in July, Thai petrochemical giant PTT Global Chemical has become a competitive and sustainable major player on the international stage.

Primed for Growth

PTT Global Chemical Public Company Limited (GC) is Southeast Asia's leading petrochemical and refining company, and a subsidiary of state-enterprise Thai oil and gas company PTT Public Company Limited. The petrochemical division became a separate entity about 30 years ago, and transitioned into its current form as GC in 2011, showing steady growth ever since. The company was ranked 19th in the top 100 Chemical Companies by ICIS (Independent Commodity Intelligence Services) in 2019 and also ranked number one in the world for sustainability in the Dow Jones Sustainability Indices (DJSI) chemicals sector in both 2019 and 2020.

Since 2011, GC has made several domestic and international acquisitions, with an approximate total value of US$800 million. Now, GC is moving ahead with a major international expansion, acquiring European specialty chemicals producer Allnex Holding GmbH through subsidiary company PTTGC International (Netherlands) B.V. for €4 billion (US$4.75 billion) from private equity firm Advent International.

This acquisition has significantly increased GC's high-value chemical production capability. It also takes advantage of numerous synergies between the two companies, which facilitates greatly expanding their range of products, markets, customer networks, efficiencies, quality of earnings, and sustainability.

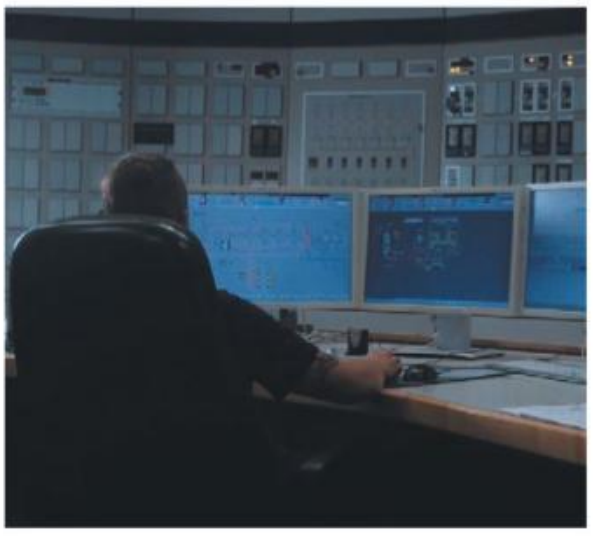
Kongkrapan Intarajang, Chief Executive Officer

A Blueprint for Success

According to GC's CEO, Mr. Kongkrapan Intarajang, the acquisition process began a few years ago. "We looked at mega-trends in the chemical industry and what sectors would be beneficial to go into. It was clear that, over the next 20 years, products will have to fit into a different set of needs related to urbanization, renewable energy, and many other future factors. Our products going forward had to have a good future."

He continues: "With GC's commodities background, the obvious targets would be specialty chemicals, where there are fewer players, more barriers to entry, higher margins, and more stable prices than commodities. A prospective company for GC would have to be strong in product development, technical knowledge and co-creation with customers."

As GC narrowed its search, they looked at high performance polymers and coating resins producers. allnex was not only the world's number one global producer of coating products, it also had a solid track record of growth, more than €2 billion (US$2.37 billion) in annual revenue, and had weathered the pandemic very well. The



company has 33 manufacturing facilities, two dozen research and technology support centers and joint ventures in five continents—which would considerably expand GC's current reach.

"allnex was also feasible to acquire," Mr. Kongkrapan said. "The owner was a private equity firm that had spent eight years building it up, so it was time for them to sell and move on. It is an excellent match. We occupy different spaces in the market and there is zero competition and duplication, so our coming together creates synergies across the board. allnex is contented to join us, and they have already received excellent feedback from their customers."

With €2.7 billion (US$3.2 billion) in cash reserves, having just sold a 12% share in PTT Public Company Limited's subsidiary power company Global Power Synergy Public Company Limited (GPSC), and a debt-equity ratio of 0.3, GC is in an excellent position for such a large purchase.

Three Steps to the Future

GC has a clearly formed vision for its future. The company's approach boils down to a three-step strategy: 1. Step Change, 2. Step Out, and 3. Step Up.

"Step Change" involves enhancing competitiveness and continued investment to create high-value-added products.

"Step Out" concerns the company's global expansion, targeting better quality earnings, fewer competitors, and more specialized products—which is where allnex fits in very well.

"Step Up" means constantly pushing forward with GC's already successful sustainability practices.

"These are integrated into all aspects of our business. We have been ranked number one in the world for sustainability these past two years, but we can see that the future will demand more to maintain our position as a leader in sustainability, so we have to stay ahead of the game. It is a major goal, for example, for us to work toward zero carbon emissions by no later than 2050," Mr. Kongkrapan said.

"We have to balance between economic, social, and environmental factors—a challenge in the chemical industry. So we have embarked on the 'circular economy' approach of making more durable or, conversely, biodegradable products for reuse and recycling, using fewer resources in production, and offering cleaner options to our customers and consumers while still being predictable to stakeholders," he said.

Creating a Sustainable Legacy

For the next decade, the company's goals are to create a more resilient portfolio, to move away from reliance on commodities production, and to develop a much larger international footprint. Acquiring allnex has more than doubled the company's global presence, which spreads its eggs throughout many more baskets.

"We will continue to be a leader in sustainability—this is very important to us. We will commit to a practical and aggressive net zero plan and announce details in the near future," Mr. Kongkrapan said. "It is one thing to say this, but it takes effort and focus to set in motion. In the next ten years, we must leave a legacy that our successors can embark on and continue to implement into a long-term and sustainable future."

www.pttgcgroup.com/en

A LEADER IN CYBERSECURITY FOR MOBILE DEVICES

Frank von Seth, CEO of cyan, explains why the company's partnership with Thailand's leading mobile network operator is important for their Asian ambitions.

Creating Peace of Mind

Smartphones have become an integral part of not only our daily lives but also our identities, defining the way we communicate, store valuable data, and receive information. It is therefore vitally important that our devices are secure and protected from cyber threats such as malware and phishing.

One of Europe's leading cybersecurity providers, cyan Security, is at the forefront of safeguarding mobile devices and their users from digital threats. Since launching in 2006, cyan has built an enviable reputation for giving its customers competitively priced peace of mind online.

The company achieved a new milestone recently when it secured a partnership with one of the fastest growing mobile network operators (MNOs) in Thailand. Under the partnership, the MNO and cyan, along with cyan's representative in Thailand, Dr. Reckendorfer & Partners (DR&P), will work together to provide cutting-edge cybersecurity solutions to the Thai MNO's customer base.

According to cyan's CEO Frank von Seth, this MNO is the perfect partner for cyan because it has a strong focus on providing innovative products to a young, successful, urban demographic in Thailand. "As a technology leader in cybersecurity, this is a fantastic opportunity for us to launch in the Thai market with a successful operator that cares about the security of its users," von Seth says.

Thailand Digital Market Focus

As a fast-growing digital hub, Thailand is one of the most tech-savvy markets in Asia, with a smartphone penetration rate of over 73% and a flourishing market for high-end mobile devices, with more than 16.5 million smartphones sold in 2020. It also ranks high in terms of social media usage and the volume of digital transactions processed each day.

Currently, Asia is the smallest revenue contributor to the group, reveals von Seth, but this is expected to change over the next five years. "Asia is a very significant market for us with immense growth potential. The region is expected to contribute about 40% of the group's revenue in five years, followed by the US [35-40%] and Europe [20-25%]," he says.

"Modern Asians are tech-savvy and understand the need for cutting-edge security solutions that they can trust and rely upon. A protective 'digital armor' from Europe is exactly what they'd choose," he says, adding that the latest Thai MNO partnership is an opportunity for the company to strengthen its presence in Thailand, and therefore in the Asia market.

"Together with our partner for the ASEAN region, Dr. Reckendorfer & Partners, we closely monitor the landscape and have established ongoing contacts in the region. In fact, we already have a few deals in the pipeline," says von Seth.

A Mass Market Solution

As von Seth explains, cyan began targeting mobile carriers a few years ago, a strategy that enables the company to penetrate a huge addressable market. Mobile carriers from around the world that have already partnered with cyan to protect millions of mobile users from cyberthreats include Deutsche Telekom, Orange, and Claro Chile, a member of the América Móvil Group.

Cybersecurity solutions tend to be large and complex, says von Seth, but cyan has designed its offering in a way that allows mobile carriers to easily deploy the service and protect their customers seamlessly.

One of the key reasons cyan wins the trust of telecom companies is the simplicity of its solutions. With the Thai MNO for example, the cyan security solution will be integrated into the MNO's existing app, which customers already have on their smartphones. The users therefore don't need to download any additional applications, and can easily activate the security system in just a few clicks. "Our mission is to simplify complex cybersecurity solutions and make state-of-the-art technology available for the mass market at an affordable price," says von Seth.

The cybersecurity partnership between cyan and telecom companies usually comes in two stages. The first stage sees cyan providing customers with protection from online threats whenever they are on the carrier's network. The second stage involves providing protection to customers' devices—even when they are not on the carrier's network—at an affordable subscription fee that is shared between cyan and the carrier.

"We believe in the market potential in ASEAN and are ready to invest further. It's a win-win-win situation based on a profit-share model," says von Seth.

"With offices in Singapore, Hong Kong, Thailand, Vietnam, Taiwan, and other ASEAN regions, we provide industry insights and local market support, 24/7," adds Wolfgang Reckendorfer, Chairman of Dr. Reckendorfer & Partners.

Expanding Beyond Telcos

As part of cyan's growth strategy, von Seth knows that it cannot be solely reliant on one industry or sector. It needs to have a more diverse pool of partners and customers.

Therefore, besides geographical expansion, cyan is looking at other growth areas such as Internet of Things (IoT), automotive, insurances and more. Another aspect of their growth strategy includes the development and market introduction of their own security app for end-users.

"Today, anything and everything that comes with a SIM [subscriber identification module] card can be prone to cyberattacks. We believe our solutions can play an important role in the future of protecting all of these devices," says von Seth.

"In the past, most of the attacks were targeting companies and organizations. Today, we are seeing an increasing number of attacks against individuals. By just mistakenly pressing a button on a harmful website, cybercriminals could have full access and control to your phone, and the only way you can gain back control of the phone is to pay a ransom," he says.

"Yes, the internet has potential dangers, but we are here to shield you from those, so you can have a worry-free digital experience."

cyan Security Group GmbH

Headquarters: Vienna, Austria
Employees: ~160 (globally)
Products: OnNet Security, OnDevice Security, Child Protection, Clean Pipe DNS, BSS/OSS Platforms

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DIGITAL SECURITY

office@cyansecurity.com
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BUILDING RESILIENCE

FILINVEST DEVELOPMENT CEO **Josephine Gotianun-Yap** IS PLOWING AHEAD WITH GROWING HER FAMILY'S DIVERSIFIED COMPANY DESPITE A DRAG FROM THE PANDEMIC.

BY **JONATHAN BURGOS**

COURTESY OF FILINVEST DEVELOPMENT CORP.

In August,

Filinvest Development president and CEO Josephine Gotianun-Yap made the gutsy call to go ahead with its listing of a REIT, into which it was injecting 17 office towers from its subsidiary Filinvest Land. At $236 million, Filinvest REIT Corp.'s IPO was one of the largest ever attempted on the Philippine stock exchange and the first for the Gotianun family in nearly a decade since its EastWest Bank went public in 2012. Then came a red flag on Aug. 4, just eight days before the first trading day for the stock, when another large Filipino company, Del Monte Philippines, postponed its IPO due to Covid-induced market volatility.

"It never crossed my mind to stop the deal," Gotianun-Yap said in a virtual media briefing around the time of the listing. "I really had confidence in the portfolio and it has proven to be most resilient and it survived the pandemic." On Aug. 12, she got the deal done and the REIT listed.

It was a calculated move by Gotianun-Yap as the pandemic continues to roil global markets and Filinvest Development's businesses, underscoring her resolve to diversify the $1.3 billion (market cap) real estate and banking company, which has roots going back six decades. Her family has come a long way from the used-car financing company Gotianun-Yap's parents started in 1955—the same year Gotianun-Yap, 66, was born, the third of four children and the only daughter.

In the 1960s, her parents ventured into their first property project in the central Philippine island of Cebu, and eventually grew that into Filinvest Development, now one of the country's largest holding companies with interests in financial services, hospitality, utilities, property and sugar. Today her mother Mercedes, 93, has a personal fortune of $1.25 billion, putting her at the No. 20 spot on the Philippines' 50 Richest (her father Andrew died in 2016).

While her mother holds the title of chairperson emerita, Gotianun-Yap's older brother Jonathan is chairman. The two siblings share in the day-to-day running the family's group of businesses, helped by another six of the next generation. Younger brother Michael also sits on the board. (Their brother Andrew Jr.—who died in May—was vice chairman of Filinvest Land until 2020.)

In an email, Jonathan says of his sister: "She is a strategic and innovative leader, and often comes up with solutions, suggestions or comments, which are quite out of the box and which have been instrumental in propelling Filinvest forward this last decade."

The siblings are playing the long game with Filinvest Development, and towards that end Gotianun-Yap has now built a war chest of funds approaching $700 million. In addition to the cash from the REIT listing, Gotianun-Yap was already sitting on $433 million raised from a fundraising effort started last year through international and domestic bond offerings.

Filinvest City's Northgate Cyberzone

Never assume everything is going to be nice and dandy. We always have that at the back of our minds.

Where will the money be deployed? Gotianun-Yap plans to invest 37 billion pesos ($740 million) over the next few years, with more than half slated for power and water utility projects. Another 16 billion pesos will be spent on office, industrial and residential developments this year, including 11 office towers across Metro Manila, Clark in Central Luzon and Cebu, she says. "We're significantly building our office segment," Gotianun-Yap notes in an interview via video in late July before the REIT offering. "That's a deliberate strategy on our part, to be more resilient."

She certainly needs resilience. The group's hospitality, retail and residential properties have become collateral damage from what's been happening in the broader Philippine property market due to the pandemic. Earnings at Filinvest Development have slumped, with first half profits down 42% to 4.2 billion pesos from a year ago, on top of 2020's full year earnings down by 29%. Filinvest Development shares are down nearly 40% since the start of 2020 when the virus first emerged.

And while it's still early days, some of the shine has come off its latest listing on the Philippine stock exchange. Filinvest REIT's rental income fell 7% in the first half to 1.4 billion pesos from a year ago while revenue slid 13% to 2 billion pesos—though net profit got an 8% boost from a tax cut. The REIT's share price has barely changed from its offering price of 7 pesos.

The company's move out of property and into other areas such as financial services, power and sugar didn't fully insulate it from the wide-ranging effects of the pandemic. In the 2020 results, the five main divisions of the company had lower revenues year on year, except for banking and sugar, which eked out modest gains. Yet the declines were the steepest in property and hospitality, allowing Gotianun-Yap to claim some advantage from the diversification strategy set in place about a decade ago. "Our 2020 performance signifies that we can be defensive during a downturn yet

also well-positioned to capture growth when the economy recovers," Gotianun-Yap and Jonathan said in their joint statement in Filinvest's 2020 annual report.

She's confident that despite current downturns in the company's business lines, creditors will continue to back its projects. "We've kept our credit record clean through the years," she says. "We've always lived up to our financial commitments, whether it's to our bondholders or to our customers or to our bankers. As a result, you can see that they're always willing to support us."

Gotianun-Yap, who helmed Filinvest Development as CEO for the past 20 years before taking on the same role at the flagship property company, believes in being prepared, a lesson learned from her father. He led the company through decades of political turmoil that upended the economy, sent the peso crashing in the 1980s and included the Asian financial crisis in the late 1990s. "[The family] always makes sure that we have cash set aside in case there's a crisis," Gotianun-Yap says. "Never assume everything is going to be nice and dandy. We always have that at the back of our minds." Filinvest Development's earnings had steadily tracked upward until the pandemic, with the company's net profit reaching a record high of 12 billion pesos in 2019.

It never crossed my mind to stop the deal. I really had confidence in the portfolio.

Since she was born at the same time as the business, Gotianun-Yap literally grew up with it. "Dinner conversations revolved around the business," she recalls. "Saturday mornings were spent in the office and we accompanied my parents to site inspections even as children." After graduating from Ateneo de Manila University in 1975 with a degree in business management, she moved to the U.S. to get her M.B.A. from the University of Chicago. Soon after, she joined the family business before rising to her present roles at Filinvest Development in 2000.

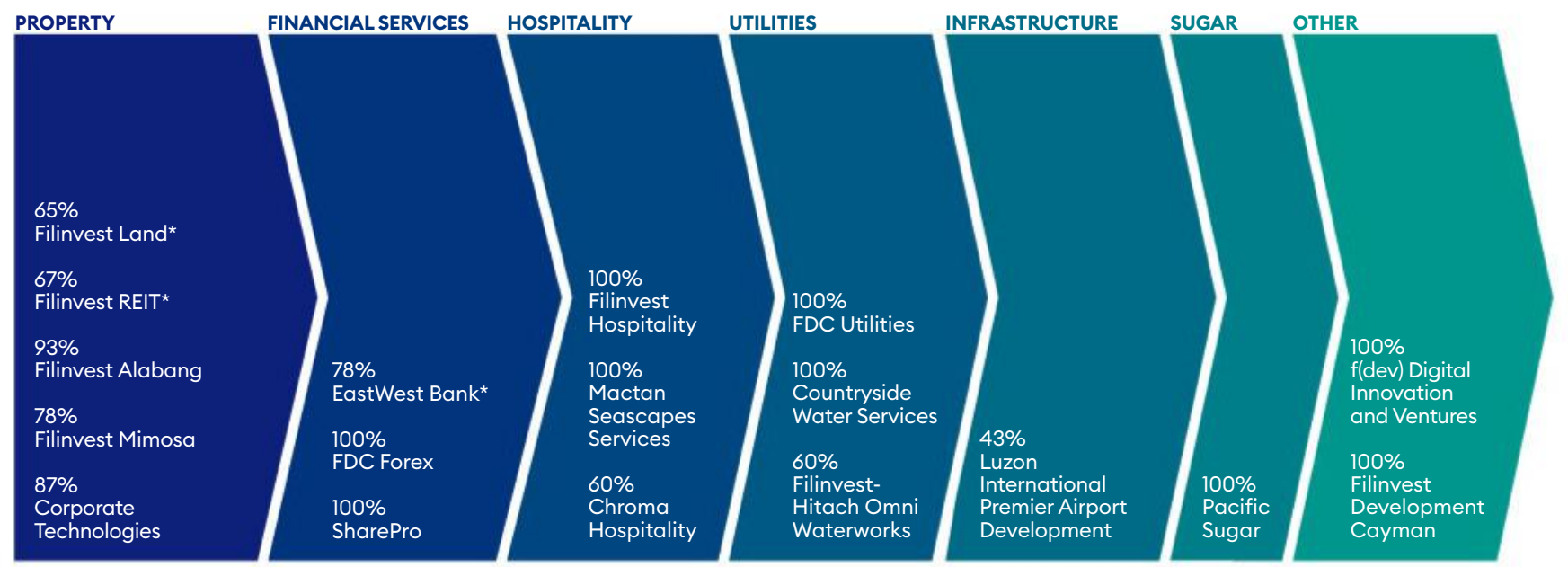
She took the helm at the listed Filinvest Land after her husband Joseph Yap—the current Philippine ambassador to Singapore—retired as president and CEO in 2012. Previously, she was president of commercial developer Filinvest Alabang, overseeing Filinvest City, the company's crown jewel development in southern Metro Manila.

Despite ongoing pandemic restrictions in the Philippines, Gotianun-Yap is confident demand for office space will continue to increase. The company's decades-long fo-

DIVERSIFIED BASE

FILINVEST DEVELOPMENT IS INVESTED IN A WIDE VARIETY OF BUSINESSES, FROM PROPERTY TO DIGITAL VENTURES

(% IS STAKE HELD BY FILINVEST DEVELOPMENT)

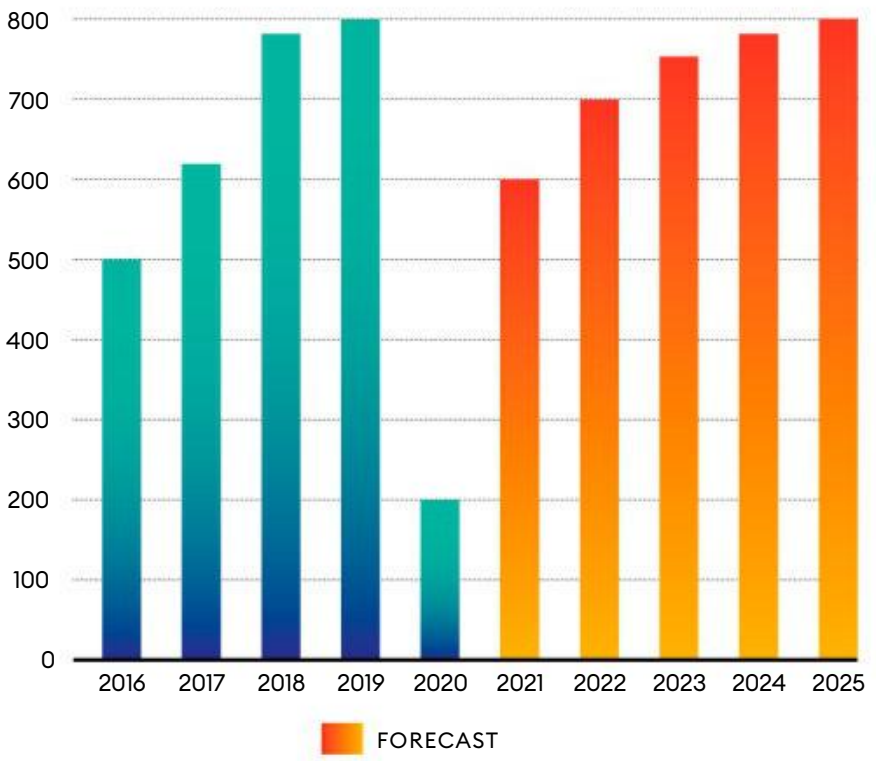


Source: Filinvest Development

*LISTED COMPANY

ROOM TO GROW

LEASED OFFICE SPACE IN THE PHILIPPINES IS EXPECTED TO INCREASE OVER THE NEXT FOUR YEARS.



Source: JLL

cus on developing properties outside of urban centers should stand Filinvest in good stead. Companies are seeking to minimize employees' exposure to Covid-19 by moving away from the crowded capital, according to a February report by property consultant JLL.

To that end, Filinvest is building a 280-hectare IT industrial park at New Clark City in Pampanga, 90km north of Manila, that will include space to cater to the booming demand for e-commerce. It's also developing office and commercial buildings on 51 hectares of reclaimed land in Cebu City, the Philippines' second-largest city.

She's optimistic that the residential property business—among the hardest hit by the pandemic—will return to pre-pandemic levels by next year. Revenue from the company's residential portfolio improved 5% to 5.3 billion pesos in the first half from a year ago, reflecting resilient demand on record low interest rates and strong remittances from overseas Filipinos. "Residential sales are starting to climb, with buyers getting used to transacting online and sellers learning how to do digital marketing," she says. Julian Tarrobago, chief investment officer of Union Bank of the Philippines, sounded a note of caution. "There are visible improvements in the economy but we're not out of the woods yet," he says. "It all depends on the reopening of the economy. Residential demand will probably return to pre-pandemic levels in late 2022 to early 2023, driven by demand from a young, vibrant and productive population."

To get ready, Filinvest wants to develop its massive landbank of 2,500 hectares over the next three years and is launching over 30 billion pesos worth of affordable and middle-income residential projects across the country including those in the provinces. As with its office developments, "Filinvest is going in the right direction by developing residential projects outside of the capital," says Lexter Azurin, deputy head of research at AB Capital Securities in Manila. "With Covid-19, more people prefer to live outside of Metro Manila. Demand for housing across the country is quite strong." A buoyant office sector and rising housing demand should lift earnings; Filinvest Land's net profit is expected to rise 3% to 3.8 billion pesos this year and then jump to 4.8 billion pesos next year, according to the average estimate of nine analysts compiled by Bloomberg.

But its strategy to move beyond existing businesses is where Gotianun-Yap is staking future growth—especially in sustainable fields such as utilities and renewable energy. "We are not pursuing sustainability initiatives for the sake of being green," Gotianun-Yap says. "They have to make economic sense."

In July, Filinvest Development's utility division and Japanese partner Hitachi won a 25-year bulk water supply contract from Metro Cebu Water District. Under the 6.6-billion-pesos deal, the duo will build three desalination facilities that, once completed, will deliver 80 million liters of water daily across Cebu to help alleviate the city's looming water crisis.

The company is investing another 13.9 billion pesos across a pipeline of renewable energy projects that include a 33-megawatt hydroelectric power plant in northern Philippines, a 20-megawatt biomass facility at its sugar mill in Mindanao and solar farms with a combined capacity of 95 megawatts. "It's good that Filinvest is branching out from its traditional businesses," says Azurin at AB Capital. "These projects will provide additional recurring income."

Aside from investing in businesses with long-term sustainability, Gotinaun-Yap is looking to cultivate the sustainability of the family by readying the next generation for bigger roles. Isabelle, her eldest child and only daughter, works as a special projects officer at EastWest Bank, while son Joseph Patrick is the chief technology officer of the company's IT arm. Francis, a son of Jonathan, is senior vice president of Filinvest Hospitality. "The third generation is being mentored to become responsible shareholders and have meaningful hands-on experience in the business," Gotianun-Yap says.

TRUSTING IN WEALTH MANAGEMENT

Asia is experiencing a wealth management boom as more affluent families and business leaders turn to family offices and trusts to protect and preserve their wealth. For HSBC Global Private Banking that means an increasingly diverse and challenging role.

Today's trust business is booming amid technological innovation and an unprecedented intergenerational transfer of wealth. As part of HSBC Global Private Banking, HSBC Trustee has evolved to support client wealth needs as it marks 75 years of operations in Asia in 2021.

Having seen the passage of wealth across multiple generations, HSBC Trustee is well versed with managing family dynamics and well placed to support clients. Its platform has grown to include services such as family governance, family office advisory and philanthropic advisory.

The traditional role of the trustee is taking the legal ownership of assets held in trust and managing them for the beneficiaries. But as asset classes become more complex and families grow and evolve, modern trustees such as HSBC Trustee find that the settlor—the person who sets up the trust— wants and can often have substantial powers at their discretion.

"I think one of the key aspects of a successful trustee is having some of the 'softer' skills," says Brent York, Global Head of Trust and Fiduciary Services at HSBC Global Private Banking. "It's about understanding the settlors' wishes as to their legacy. Who do they want to benefit and when? What are the values they want to pass on?"

For Cynthia Lee, Head of Wealth Planning and Advisory for Asia at HSBC Global Private Banking, being a trustee means being more than a financial adviser. "I see the trustee as a confidant for the family," she says. "When the patriarch or matriarch of a family is looking to find a trustee, our job is to understand the assets that are held in trust. Very often these are the core, could be the business, could be the core investments, could be everything. Most importantly, we understand the family wealth ambition and needs."

Intergenerational Transfer

HSBC estimates there will be an intergenerational wealth transfer of US$1.9 trillion in Asia over the next decade. "We're seeing a lot more first to second generation and second to third generation change happening now," says York. "And that's going to continue over the next 10 to 15 years in Asia, whereas in Europe and the U.S., they have experienced more succession through multiple generations."

Family offices in Asia can be quite different from those in Europe or North America for several reasons. "The rise of the family office is a fairly new concept in Asia," York adds. "A lot of activity is currently focused on investment diversification. We are also seeing rapid wealth creation from the younger entrepreneurs who are moving into a phase of protecting and growing that wealth."

Technological, environmental, generational and social changes are defining the future of wealth and legacy planning. Many clients recognise that their wealth is not measured purely by its monetary value today and tomorrow, but by the positive change that it can make in the world.

"The succession of wealth is also about the preservation and transfer of the family values, the heritage, the vision to the next generation and these are the key areas which our clients in Asia are talking about," says Lee. "Identifying and preparing the next generation, preservation of family harmony, uniting the family, continuing the family dynasty are all common themes with our clients. This is how HSBC sets itself apart—our tools and services are focused on both the financial and non-financial aspects of wealth succession."

Asia is quite diverse, with Japan, Hong Kong, Singapore and Taiwan considered as

Brent York, Global Head of Trust and Fiduciary Services, HSBC Global Private Banking

Cynthia Lee, Head of Wealth Planning and Advisory, Asia, HSBC Global Private Banking

established wealth markets. "That's where we have family offices that have been around for 35 years," Lee says. "The oldest one, in Hong Kong is celebrating 70 years in 2022." Then there are emerging wealth markets, which Lee describes as "super exciting." China is the most obvious example, where technology and the new economy have created new entrepreneurs. Countries such as Indonesia and the Philippines have also been part of the tech revolution.

Booming Philippine Market

HSBC's presence in the Philippines dates back 146 years. In 1875, the bank opened an office in Binondo—Manila's Chinatown—to offer trade finance services to the community's exporters and merchants. Today, the southeast Asian country remains a vibrant market for HSBC, despite its financial ups and downs over the past two decades.

"The Philippines is one of the few countries that came out well from the 1997 Asian financial crisis," says Lee. "Over the past 10 years, it has been a booming domestic market." She says HSBC Global Private Banking clients come from all walks of life. "It could be a local food and beverage business, it could be retail industry, a biochemical plant, a hotel chain."

York points out that families are relatively larger in the Philippines. "Often there's a lot of concerns around the family business and the succession similar to many other Asian countries," he says. "There might be multiple parties involved and they are also interested in looking at how we can help them with their access to non-Philippine investments and assets."

Due to Covid-19, HSBC teams have not been able to visit clients in the Philippines—and many other countries—since 2019. "Through the pandemic, clients have had to adapt," says York. "They've had to change business model or retrench, particularly some of those in hospitality and tourism, while others have seen it as an opportunity to invest."

HSBC had to adjust as well. "Pre-pandemic, a team would arrive in Manila with a packed agenda over three days," says Lee. "Now it's two-hour Zoom calls spread over three half days. On the plus side, the team held a meeting with a Philippine family of almost 30 people, via Zoom, even though they were spread across the globe. Some travel is no longer necessary but some engagement by their nature has to be done face to face."

Managing A Faster Pace

HSBC Trustee often finds that younger family members are less conservative than their elders. "The basics of the trust solution is still valid for them to safeguard their wealth," York observes. "But being able to give them the powers to manage the assets is important." The younger generation of business leaders is more agile, he notes. "They want things to happen at a faster pace. And that can be a little bit challenging when we need to give advice."

The bank has adopted new technology and new ways of communicating. "With some of the more dynamic and younger clients, technology is going to become more important because they don't use emails," says York. "They communicate with different social media platforms and we have embraced some of that new technology."

Additional considerations when making investments such as environmental, social and governance (ESG) and social impact investing are another important trend. "Some families might be more ambitious and more liberal, and decide to deploy a higher percentage of their asset allocation altogether into investments which incorporate ESG and social impact outcomes," says Lee. "They might entrust the younger members of the family to make some of these decisions."

HSBC Global Private Banking aims to build a long term and trusted relationship with clients. Its wealth planning, philanthropy and family governance service teams have been highly recognised by the industry with awards from Asian Private Banker and Wealth Briefing Asia in 2020 and 2021.

"While we don't have a magic wand to fix all family challenges, our job is to ensure that within that established framework agreed between us and the family, we're able to provide all the options that are on the table," she says. "We are here to help them to preserve their wealth and leave a legacy for the next generations."

HSBC Private Banking

privatebanking.hsbc.com

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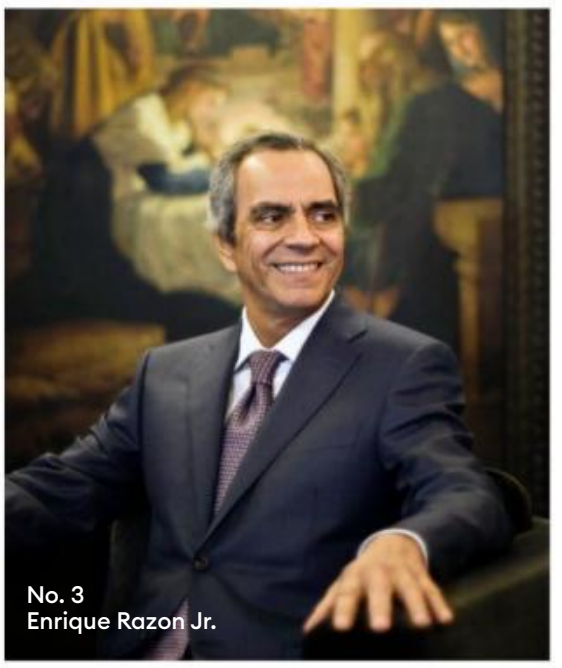
REGAINING MOMENTUM

Wealth is on the upswing, after taking a hit last year.

BY **NAAZNEEN KARMALI AND JANE HO**

Fortunes in the Philippines have staged a robust recovery: collective wealth of the 50 richest was up 30% to $79 billion. Despite the ravages of Covid-19, the economy notched up double-digit growth in this year's second quarter. Investor sentiment remained buoyant, fuelling a 13% rise in the benchmark stock index from a year ago.

The wealth of more than half the list members was up this year with four listees adding over $1 billion. The top three were the biggest dollar gainers by far, collectively richer by nearly $6 billion. The **Sy siblings**, heirs to the group built by the late Henry Sy Sr., added $2.7 billion to remain at No. 1 with $16.6 billion. A $1.7 billion boost kept property tycoon **Manuel Villar** in second place with a net worth of $6.7 billion. After expanding his portfolio by taking control of Manila Water, **Enrique Razon Jr.** secured his hold on the third spot with $5.8 billion.



No. 3
Enrique Razon Jr.

Despite pandemic headwinds, an active IPO market in the Philippines made **Betty Ang**, cofounder and president of Monde Nissin, this year's biggest percentage gainer. She was up 20 spots following more than a seven-fold jump in her wealth to $1.4 billion after the company's June IPO, the largest in the country's history. This one public float produced three newcomers to the ranks—Monde Nissin chairman **Hartono Kweefanus**, Ang's brother-in-law; the company's CEO **Henry Soesanto**; and brothers **Keng Sun** and **Peter Mar**, heirs to a biscuit business that was sold by their family to Monde Nissin.

Listing gains also produced this year's richest newcomers—**Dennis Anthony** and **Maria Grace Uy**, cofounders of Converge ICT Solutions, which saw demand for its broadband services by homebound Filipinos rocket during the pandemic. A total of eight newcomers created a healthy churn in the list this year. They include **Luis Yu Jr.** and **Mariano Martinez Jr.**, owners of 8990 Holdings, a builder of low-cost homes. Husband and wife **Benedicto** and **Teresita Yujuico** reaped riches from the listing of DDMP REIT, an office landlord they co-own with **Edgar Sia II**.

More than a dozen listees saw their wealth drop, including liquor and airline billionaire **Lucio Tan**. The pandemic crippled his Philippine Airlines, which racked up losses and filed for bankruptcy in the U.S. Nine from last year dropped off, mainly because the cutoff for the list doubled to $200 million.

Reporting by Jonathan Burgos, John Kang, Anuradha Raghunathan, Anis Shakirah Mohd Muslimin and Yue Wang.

METHODOLOGY: The list was compiled using shareholding and financial information obtained from the families and individuals, stock exchanges, analysts and other sources. Unlike our billionaire rankings, this list includes family fortunes, including those shared among extended families. Net worths are based on stock prices and exchange rates as of the close of markets on August 20, 2021. Private companies were valued based on similar companies that are publicly traded. The list can also include foreign citizens with business, residential or other ties to the country, or citizens who don't reside in the country but have significant business or other ties to the country.

VEEJAY VILLAFRANCA/BLOOMBERG

Andrew and Kevin Tan

COURTESY OF CONVERGE ICT SOLUTIONS INC.

Top Speed

DENNIS ANTHONY & MARIA GRACE UY

Dennis Anthony Uy and his wife Maria Grace, cofounders of Converge ICT Solutions, join the list for the first time with a net worth of $2.8 billion. Their wealth derives primarily from their stake in the fast-growing broadband services provider, which went public last October in one of the country's largest-ever IPOs, raising $522 million.

Manila-based Converge saw an 84% jump in revenue to 5.5 billion pesos ($110 million) in the first quarter from a year earlier, while net income nearly tripled to 1.5 billion pesos, on a surge in demand during the pandemic. The company's shares are up over 70% since the IPO, and it now sports a market cap of 233 billion pesos.

Uy, 55, left China at age 11 to live with an uncle in the Philippines. After studying electrical engineering Uy launched a cable TV business before starting telecom company ComClark Network and Technology in 1997.

In 2007, the husband-and-wife duo started Converge, a subsidiary of ComClark (Dennis is CEO of Converge and Maria, a certified public accountant, is president). In 2019 the Uys secured $250 million in funding from PE firm Warburg Pincus, which helped them expand the company's fiber network to cover 25% of Filipino households. The company doubled its subscriber base to over 1 million last year and plans to more than double the reach of its fiber network by 2025. *—Anis Shakirah Mohd Muslimin*

PHILIPPINES' 50 RICHEST

1. SY SIBLINGS
$16.6 BILLION ▲
SM INVESTMENTS

2. MANUEL VILLAR
$6.7 BILLION ▲
GOLDEN M.V. HOLDINGS
AGE: 71

3. ENRIQUE RAZON JR.
$5.8 BILLION ▲
INTERNATIONAL CONTAINER TERMINAL SERVICES
AGE: 61

4. LANCE GOKONGWEI & SIBLINGS
$4 BILLION ▼
JG SUMMIT HOLDINGS
AGE: 54

5. JAIME ZOBEL DE AYALA
$3.3 BILLION ▼
AYALA CORP.
AGE: 87

6. DENNIS ANTHONY & MARIA GRACE UY
$2.8 BILLION ★
CONVERGE ICT SOLUTIONS
AGES: 55, 53

7. TONY TAN CAKTIONG
$2.7 BILLION ▲
JOLLIBEE FOODS
AGE: 68

CHANGE IN WEALTH KEY:
▲ UP ▼ DOWN ◄► UNCHANGED
★ NEW TO THE LIST ⮌ RETURNEE

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PHILIPPINES' 50 RICHEST

8. ANDREW TAN
$2.6 BILLION ▲
ALLIANCE GLOBAL GROUP
AGE: 69

9. RAMON ANG
$2.3 BILLION ▲
SAN MIGUEL
AGE: 67

10. TY SIBLINGS
$2.2 BILLION ▲
GT CAPITAL HOLDINGS

11. HARTONO KWEEFANUS
$1.95 BILLION ★
MONDE NISSIN
AGE: 71

12. LUCIO TAN
$1.9 BILLION ▼
LT GROUP
AGE: 87

13. ISIDRO CONSUNJI & SIBLINGS
$1.8 BILLION ▲
DMCI HOLDINGS
AGE: 71

14. LUCIO & SUSAN CO
$1.75 BILLION ▲
PUREGOLD PRICE CLUB
AGES: 66, 63

CHANGE IN WEALTH KEY:
▲ UP ▼ DOWN ◄► UNCHANGED
★ NEW TO THE LIST ⮌ RETURNEE

Andrew *(left)* and Kevin Tan

COURTESY OF ALLIANCE GLOBAL

High Spirits
ANDREW TAN

Andrew Tan, 69, chairman of Alliance Global Group, saw his net worth rise to $2.6 billion on the strong performances of the food-to-property company's liquor and real estate businesses. Shares climbed 72% since we last measured fortunes.

The Manila-based group's first-half net profit more than doubled to 8.5 billion pesos ($169 million) from a year earlier as a pandemic-induced surge in global sales pushed up earnings at its Philippine-listed spirits subsidiary Emperador 53% to 5.1 billion pesos. "The liquor business has been a bright spot because more people turned to our whisky and brandy during the pandemic," says Kevin Tan, the patriarch's eldest son and Alliance CEO, in a phone interview. "Our China business grew 200% last year." Emperador is planning a second listing on the Singapore Stock Exchange this year; the timing hasn't been announced but the board has given its nod.

Alliance's real estate company Megaworld continued to expand its office portfolio to cater demand, particularly from business process outsourcing (BPO) companies. "Whenever there's a global downturn, you'll see an uptick in the BPO market," says Tan, 41. Megaworld put ten office buildings—16% of its office portfolio—into MREIT, scheduled to list at the end of September. *—Anuradha Raghunathan*

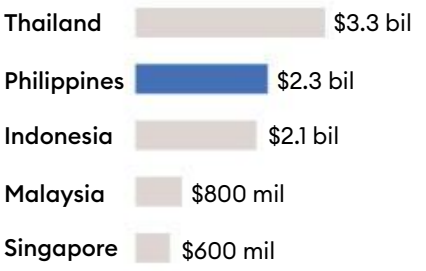
IPO

Cashing In

After years in the doldrums, the Philippines' stock market has become one of Southeast Asia's hottest markets for IPOs in the past 12 months. In June, instant noodle giant Monde Nissin raised $1 billion in the country's biggest-ever listing and four other firms have gone public since August last year, raising over $2 billion. Three were REITs, after new rules encouraged their creation. Three more REITs are expected to list by year-end, with all coming from the country's richest: Lance Gokongwei's RL Commercial, Andrew Tan's Megaworld and Manuel Villar's Vista Land. REITs are popular with investors seeking yield amid ultra-low interest rates worldwide. *—Jonathan Burgos*

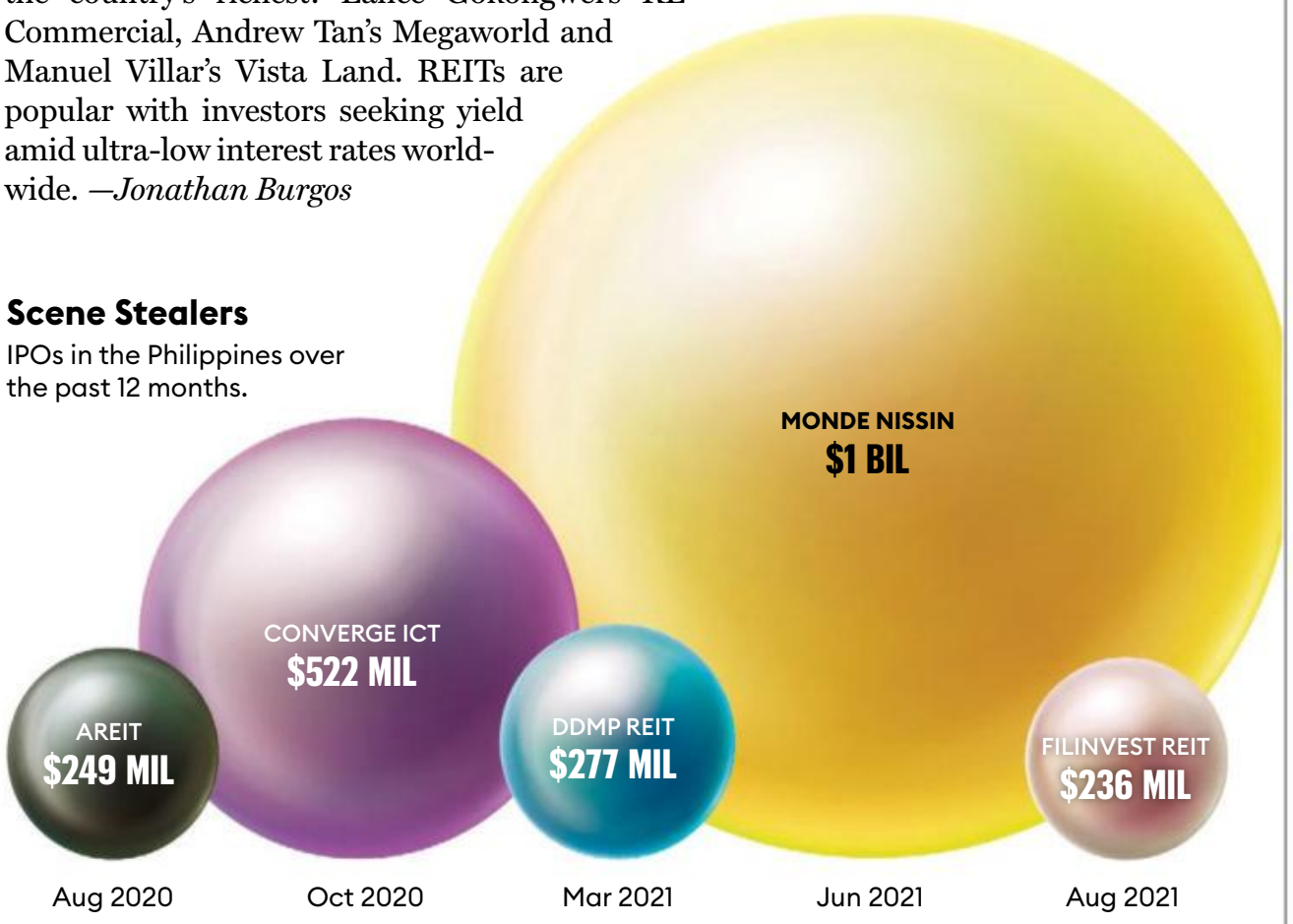
Second Best

Top IPO markets in Southeast Asia over the past 12 months.



Scene Stealers

IPOs in the Philippines over the past 12 months.



In the Pipeline

Three more REITs are on the way this year.

COMPANY	AMOUNT	EXPECTED LISTING DATE
RL Commercial REIT	$468 million	Sep
Megaworld REIT	$518 million	Sep
AllDay Marts	$119 million	Nov
Vista Land REIT	$200 million	Before 2022

Sources: Bloomberg, Forbes Asia

PHILIPPINES' 50 RICHEST

15. VIVIAN QUE AZCONA & SIBLINGS
$1.65 BILLION ▲
MERCURY DRUG
AGE: 66

16. RICARDO PO SR.
$1.45 BILLION ▲
CENTURY PACIFIC FOOD
AGE: 90

17. SOLEDAD OPPEN-COJUANGCO
$1.42 BILLION ▲
SAN MIGUEL
AGE: 83

18. BETTY ANG
$1.4 BILLION ▲
MONDE NISSIN
AGE: 66

19. WILLIAM BELO
$1.3 BILLION ▲
WILCON DEPOT
AGE: 76

20. MERCEDES GOTIANUN
$1.25 BILLION ▼
FILINVEST DEVELOPMENT
AGE: 93

21. INIGO ZOBEL
$1.15 BILLION ▲
AYALA CORP.
AGE: 64

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PHILIPPINES' 50 RICHEST

22. ROBERTO ONGPIN
$1.1 BILLION ▼
ALPHALAND
AGE: 84

23. ROBERT COYIUTO JR.
$835 MILLION ▼
PRUDENTIAL GUARANTEE & ASSURANCE
AGE: 68

24. DEAN LAO
$825 MILLION ▲
D&L INDUSTRIES
AGE: 62

25. HENRY SOESANTO
$795 MILLION ★
MONDE NISSIN
AGE: 69

26. CAMPOS SIBLINGS
$760 MILLION ▲
UNILAB

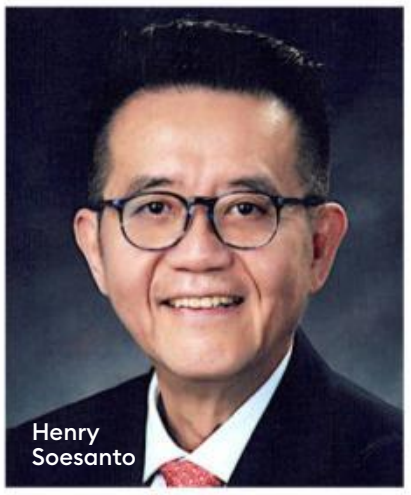
27. DENNIS UY
$710 MILLION ▲
UDENNA GROUP
AGE: 47

28. EDGAR SIA II
$675 MILLION ▼
DOUBLEDRAGON PROPERTIES
AGE: 44

CHANGE IN WEALTH KEY:
▲ UP ▼ DOWN ◄► UNCHANGED
★ NEW TO THE LIST ↩ RETURNEE

Hartono Kweefanus

Betty Ang


Henry Soesanto

Instant Riches

MONDE NISSIN

The $1 billion IPO in June of instant noodle maker Monde Nissin—the country's biggest listing to date—gave a major boost to the wealth of its controlling shareholders and added three newcomers to the ranks.

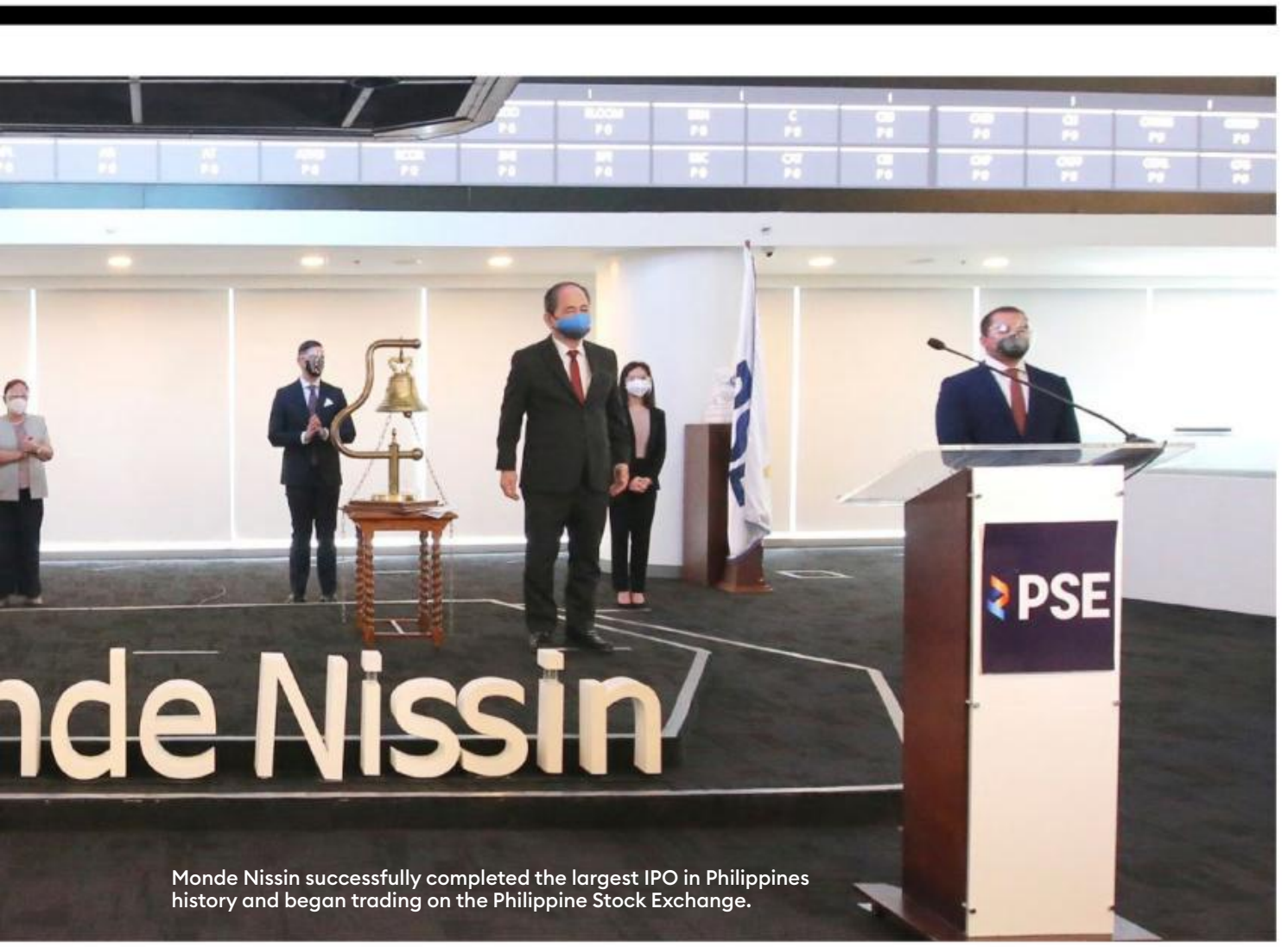
The Philippine food giant was cofounded 42 years ago by its president **Betty Ang** with her late father-in-law Hidajat Darmono, whose family also owns Indonesian biscuit maker Khong Guan. Ang, 66, saw her fortune swell to $1.4 billion, which she shares with her husband Hoediono Kweefanus (Monde Nissin's vice chairman and Darmono's second son).

The IPO propelled Ang's brother-in-law **Hartono Kweefanus** into the three-comma club for the first time. Kweefanus, 71, who chairs Monde Nissin, debuts with a $1.9 billion fortune, which he shares with two other siblings. (Darmono's sons adopted a different surname from their father.)

Another relative to reap a bounty is Monde Nissin's CEO **Henry Soesanto**, who's married to Darmono's daughter Monica. Their combined stake is now worth $795 million. Soesanto moved from Indonesia more than 40 years ago to manage the company's first biscuit factory in the Philippines.

Brothers **Keng Sun and Peter Mar**, grandsons of Mar Chew, founder of

COURTESY OF MONDE NISSIN



Monde Nissin successfully completed the largest IPO in Philippines history and began trading on the Philippine Stock Exchange.

biscuit maker M.Y. San, make their debut with a $410 million fortune shared with their family. The Mars acquired shares in Monde Nissin after they sold M.Y. San (which is now called Monde M.Y. San) to the noodle maker in two tranches—60% in 2001 and the remaining in January, ahead of the IPO.

Monde Nissin plans to use half of the IPO proceeds to expand its alternative meat brand Quorn in the U.S., after purchasing the British company in 2015 for £550 million ($760 million) in what was the company's biggest-ever acquisition. Monde Nissin's shares are up 24% since the listing. While revenue flatlined, the company's net profit plunged 96% year-on-year to 204 million pesos in the first half of this year, due to exceptional charges from the redemption of convertible bonds and the rising cost of raw materials such as palm oil and wheat. First Metro Securities analyst Estella Dhel Villamiel is optimistic earnings will recover this year. "High commodity prices are transitory and should be mitigated by price increases as well as efficiency programs in place," she says by email.

Ang and Darmono launched Monde Nissin, then a small biscuit factory in Laguna, south of Manila, with 4 million pesos in 1979, expanding to instant noodles a decade later. After slugging it out with rivals such as Nestle's Maggi and Universal Robina's Nissin Ramen for over three decades, Monde Nissin's Lucky Me! brand has carved out a 70% share of the Philippine instant noodle market, according to Nielsen data. The company also distributes beverages, breads, milk products and sauces. *—Jonathan Burgos*

PHILIPPINES' 50 RICHEST

29. JACINTO NG
$580 MILLION ▲
ASIA UNITED BANK
AGE: 79

30. YAP FAMILY
$530 MILLION
MANILA BULLETIN PUBLISHING

31. MANUEL ZAMORA JR.
$450 MILLION ▲
NICKEL ASIA
AGE: 82

32. LUIS YU JR.
$445 MILLION ★
8990 HOLDINGS
AGE: 65

33. GILBERTO DUAVIT JR.
$440 MILLION ★
GMA NETWORK
AGE: 57

34. MENARDO JIMENEZ
$430 MILLION ▲
GMA NETWORK
AGE: 88

35. KENG SUNG & PETER MAR
$410 MILLION ★
MONDE NISSIN

36. FELIPE GOZON
$405 MILLION ▲
GMA NETWORK
AGE: 81

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PHILIPPINES' 50 RICHEST

37. **DELFIN J. WENCESLAO JR.**
$385 MILLION ▲
D.M. WENCESLAO & ASSOCIATES
AGE: 77

38. **MARIANO TAN JR.**
$375 MILLION ▲
UNILAB
AGE: 59

39. **OSCAR LOPEZ**
$300 MILLION ▲
ABS-CBN CORP.
AGE: 91

40. **FREDERICK DY**
$295 MILLION ▲
SECURITY BANK
AGE: 66

41. **TOMAS ALCANTARA**
$290 MILLION ▼
ALSONS CONSOLIDATED RESOURCES
AGE: 75

42. **JOSE ANTONIO**
$265 MILLION ▲
CENTURY PROPERTIES GROUP
AGE: 74

43. **CARLOS CHAN**
$240 MILLION ▼
OISHI
AGE: 80

CHANGE IN WEALTH KEY:
▲ UP ▼ DOWN ◄► UNCHANGED
★ NEW TO THE LIST ⮌ RETURNEE

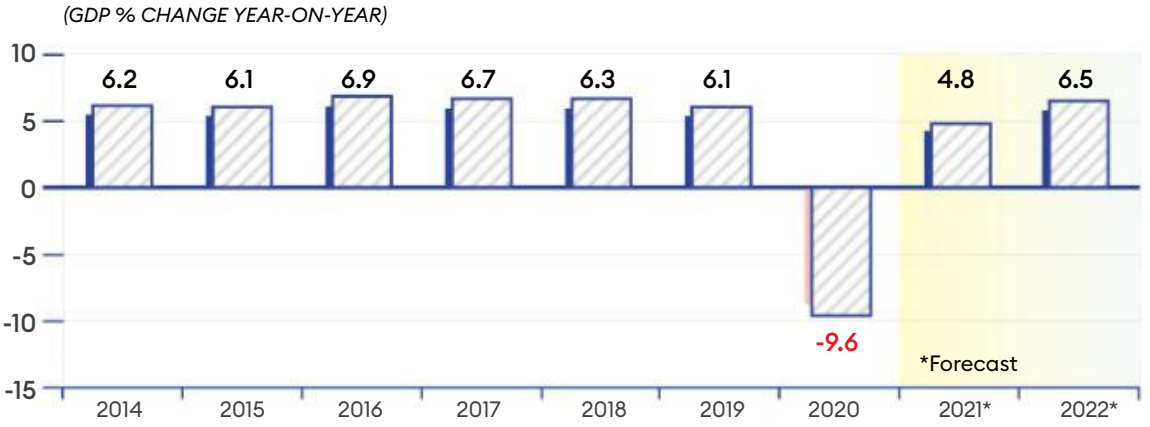
Wealth Creation

Growth With Risks

The Philippines pulled out of a year-long recession in the second quarter with headline-grabbing 11.8% GDP growth—the fastest year-on-year quarterly expansion in over three decades. The rebound contrasts dramatically with the 17% decline in the year-earlier quarter. This quarter's jump was chalked up to the government's robust response through social programs and monetary measures to cushion the pandemic's financial impact. Rising Covid-19 cases and repeated lockdowns, however, have put the recovery at risk. In mid-August the government lowered its GDP growth target to between 4% to 5% from the previous range of 6% to 7%. And despite President Rodrigo Duterte's heralded pivot to China, Beijing has yet to fully deliver promised billions in investment to help reboot growth. *—Rainer Michael Preiss* Ⓕ

Upswing

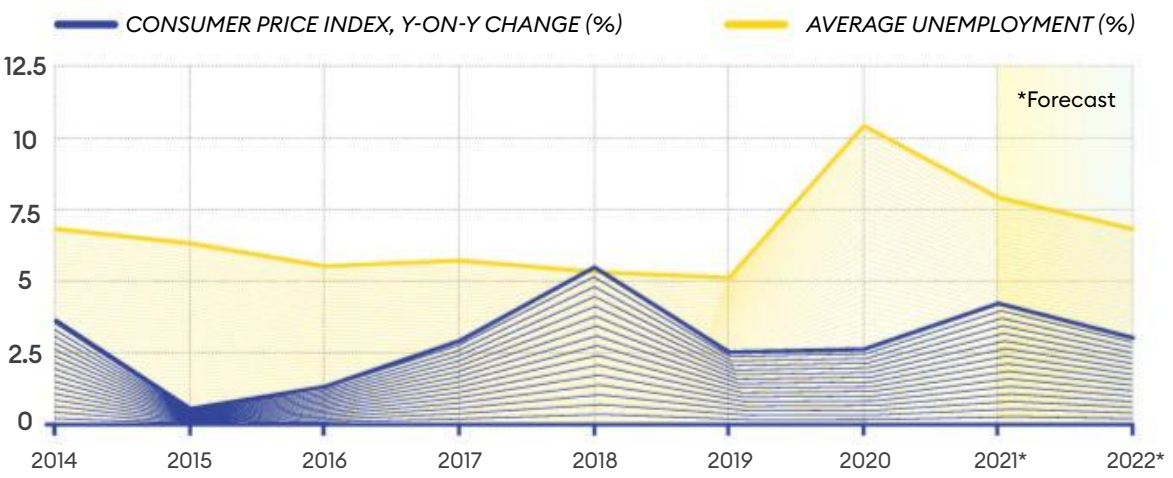
Though the growth forecast for this year was cut amid a spike in Covid-19 cases, a solid recovery is expected next year.



Sources: Philippines Statistics Authority, Bloomberg

Under Strain

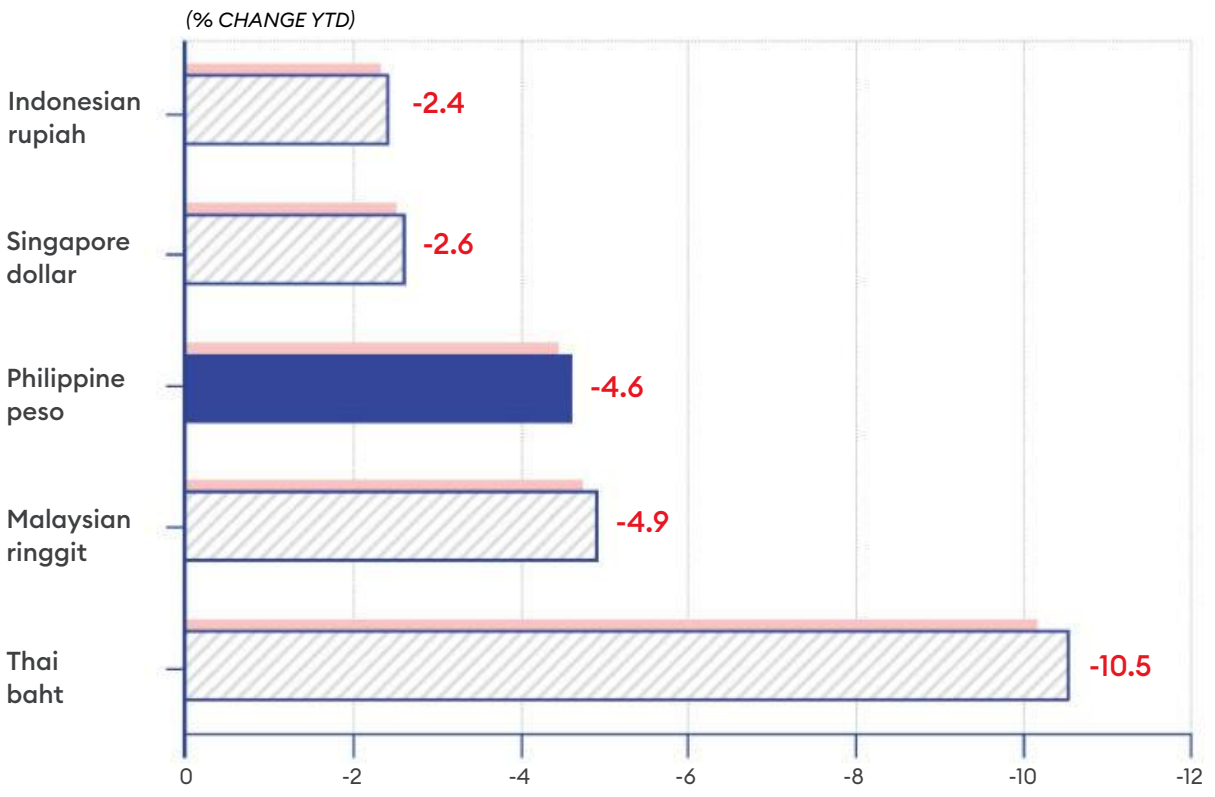
Household spending is expected to remain lackluster this year, due to unemployment hovering at 8% and consumer prices projected to rise 4%.



Source: Philippine Statistics Authority, Bloomberg

Midmost

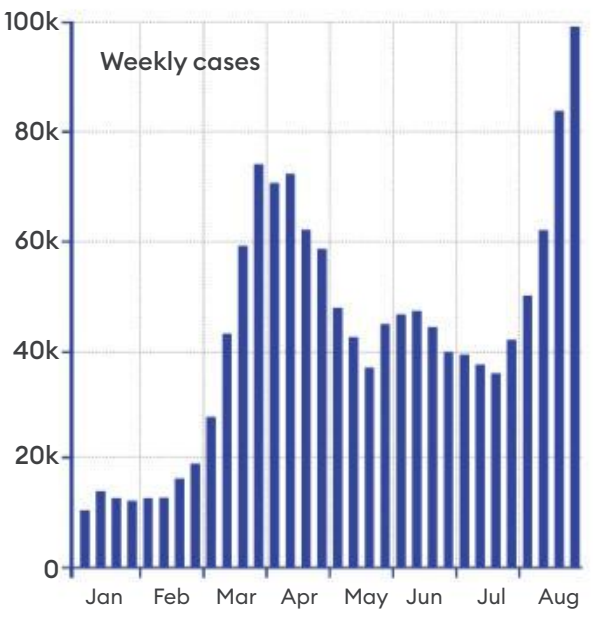
The Philippine peso's decline puts it halfway among those of ASEAN's major currencies.

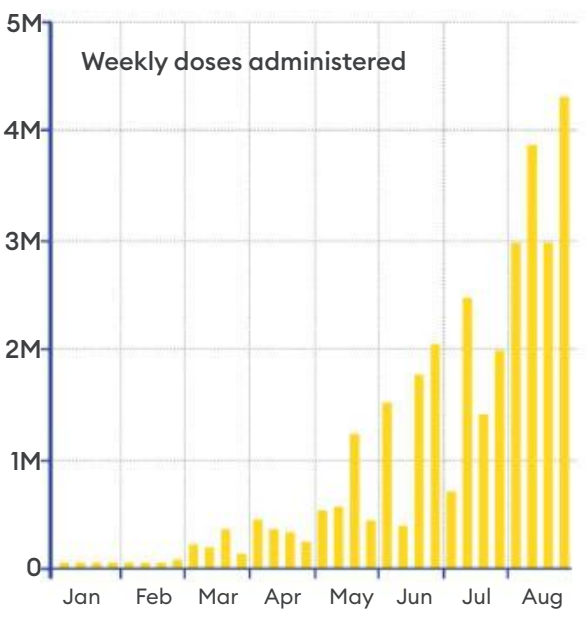


Source: Bloomberg

Another Wave

Metro Manila was again placed under strict lockdown in early August to stop the spread of the Delta variant.





Source: John Hopkins University

PHILIPPINES' 50 RICHEST

44. WILFRED STEVEN UYTENGSU JR.

$235 MILLION ▼
ALASKA MILK
AGE: 59

45. PHILIP ANG

$225 MILLION ▲
NICKEL ASIA
AGE: 79

46. PHILIPPE JONES LHUILLIER

$220 MILLION ▼
CEBUANA LHUILLIER
AGE: 76

47. JORGE ARANETA

$215 MILLION ▼
ARANETA GROUP
AGE: 85

48. BENEDICTO & TERESITA YUJUICO

$210 MILLION ★
DDMP REIT

49. MARIANO MARTINEZ JR.

$205 MILLION ★
8990 HOLDINGS
AGE: 66

50. ALFREDO YAO

$200 MILLION ▼
MACAY HOLDINGS
AGE: 77

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COVID'S FORGOTTEN HERO

THE INVESTIGATION

Without **Ian MacLachlan**'s breakthrough delivery system, Moderna and Pfizer couldn't safely get their mRNA vaccines into your cells. So why does hardly anyone acknowledge the Canadian biochemist's seminal contributions—or pay a dime in royalties?

BY **NATHAN VARDI** • PHOTOGRAPH BY **JENS KRISTIAN BALLE** FOR FORBES

IN THE SUMMER OF 2020, AS THE PANDEMIC RAGED,

infecting more than 200,000 people a day across the globe, Pfizer CEO Albert Bourla and BioNTech CEO Uğur Şahin boarded an executive jet en route to the hilly countryside of Klosterneuburg, Austria. Their destination: a small manufacturing facility located on the west bank of the Danube River called Polymun Scientific Immunbiologische Forschung. Bourla and Şahin were on a mission to get the company to manufacture as many lipid nanoparticles as possible for their new Covid-19 vaccine, which was on a fast track to receive emergency authorization from the U.S. Food & Drug Administration.

The Pfizer-BioNTech vaccine had been engineered with messenger RNA technology that instructs the body's immune system to combat the coronavirus. But to get it safely into human cells, the mRNA needed to be wrapped in microscopic fragments of fat known as lipids. The Austrian manufacturing plant was one of the few places on Earth that made the required lipid nanoparticles, and Bourla insisted Şahin go with him personally to press their case.

"The whole mRNA platform is not how to build an mRNA molecule; that's the easy thing," Bourla says. "It is how to make sure the mRNA molecule will go into your cells and give the instructions."

Yet the story of how Moderna, BioNTech and Pfizer managed to create that vital delivery system has never been told. It's a complicated saga involving 15 years of legal battles and accusations of betrayal and deceit. What is clear is that when humanity needed a way to deliver mRNA to human cells to arrest the pandemic, there was only one reliable method available—and it wasn't one originated in-house by Pfizer, Moderna, BioNTech or any of the other major vaccine companies.

A months-long investigation by *Forbes* reveals that the scientist most responsible for this critical delivery method is a little-known 57-year-old Canadian biochemist named Ian MacLachlan. As chief scientific officer of two small companies, Protiva Biotherapeutics and Tekmira Pharmaceuticals, MacLachlan led the team that developed this crucial technology. Today, though, few people—and none of the big pharmaceutical companies—openly acknowledge his groundbreaking work, and MacLachlan earns nothing from the technology he pioneered.

"I just wasn't going to spend the rest of my life dealing with it, but I can't escape it," MacLachlan says. "I open my browser in the morning and look at the news, and 50% of it is vaccines—it's everywhere—and I have no doubt the vaccines are using the technology we developed."

Moderna Therapeutics vigorously disputes the idea that its mRNA vaccine uses MacLachlan's delivery system, and BioNTech, the vaccine maker partnered with Pfizer, talks about it carefully. Legal proceedings are pending, and big money is at stake.

Moderna, BioNTech and Pfizer are on their way to selling $45 billion worth of vaccines in 2021. They don't pay a dime to MacLachlan. Other coronavirus vaccine makers, such as Gritstone Oncology, have recently licensed MacLachlan's Protiva-Tekmira delivery technology for between 5% and 15% of product sales. MacLachlan no longer has a financial stake in the technology, but a similar royalty on the Moderna and Pfizer-BioNTech vaccines could yield as much as $6.75 billion in 2021 alone. In an ironic twist of fate, though, President Biden's proposal to waive Covid-19 vaccine patents would make it unlikely that the intellectual property related to MacLachlan's advances could be a source of riches.

> "I look at the news, and 50% of it is vaccines—it's everywhere—and **I have no doubt** the vaccines are using the technology we developed."

JAMES MACDONALD/BLOOMBERG; REBECCA MILLER FOR FORBES

Acuitas Therapeutics CEO Thomas Madden, MacLachlan's scientific rival, in his Vancouver lab. His company may be small and private, but its impact has been enormous. In 2020, its 30 employees worked around the clock on the delivery system for the Pfizer-BioNTech mRNA vaccine.

Despite their denials, scientific papers and regulatory documents filed with the FDA show that both Moderna's and Pfizer-BioNTech's vaccines use a delivery system strikingly similar to what MacLachlan and his team created—a carefully formulated four-lipid component that encapsulates mRNA in a dense particle through a mixing process involving ethanol and a T-connector apparatus.

For years, Moderna claimed it was using its own proprietary delivery system, but when it came time for the company to test its Covid-19 vaccine in mice, it used the same four kinds of lipids as MacLachlan's technology, in identical ratios.

Moderna insists the preclinical formulation of the vaccine was not the same as the vaccine itself. Subsequent regulatory filings by Moderna show its vaccine uses the same four types of lipids as MacLachlan's delivery system but with a proprietary version of one of the lipids and the ratios "slightly modified" in a still undisclosed manner.

It's a similar story for Pfizer and BioNTech. FDA documents show their vaccine uses the same four kinds of lipids in nearly the exact ratios that MacLachlan and his team patented years ago, albeit with one of those lipids being a new proprietary variation.

Not everyone ignores MacLachlan. "A lot of credit goes to Ian MacLachlan for the LNP [lipid nanoparticle]," says Katalin Karikó, the scientist who laid the groundwork for mRNA therapies before joining BioNTech in 2013. But Karikó, now a frontrunner for a Nobel Prize, is angry that MacLachlan didn't do more to help her use his delivery system to build her own mRNA company years ago. "[MacLachlan] might be a great scientist, but he lacked vision," she says.

Katalin Karikó's research was crucial to the development of the mRNA vaccines. In October, she could become the 58th woman to win a Nobel Prize.

Seven years ago, MacLachlan quit his position at Tekmira, walking away from his brilliant discovery and any potential financial rewards. Messy legal battles and political infighting within the biopharma industry over the delivery system had taken a toll on him. His emotions are complex. He may be overlooked, but he knows that he helped save the world.

"There's a team of people who gave a great deal of their lives to the development of this technology. They gave their heart and soul," MacLachlan says. "These people worked like dogs and gave the best part of themselves to develop it."

• • •

Perched on a hilltop, Hohentübingen Castle towers above the town of Tübingen, Germany. In October 2013, MacLachlan, then the chief scientific officer of Tekmira Pharmaceuticals, trudged up the hill to the castle to attend a cocktail party at the first International mRNA Health Conference. During the evening,

MacLachlan struck up a conversation with Stéphane Bancel, the CEO of an upstart mRNA company called Moderna Therapeutics. MacLachlan suggested Tekmira and Moderna collaborate using his innovative drug delivery system. "You are too expensive," Bancel told him.

The exchange gave MacLachlan a bad feeling. So did the presence of a former colleague, Thomas Madden, who had been fired by Tekmira five years earlier. By this point MacLachlan had spent more than a decade working on his delivery system, yet people like Bancel seemed more interested in working with the London-born Madden.

The rivalry between these two scientists is the root of the controversy over the delivery technology that today's Covid-19 vaccines rely on. MacLachlan and Madden met 25 years ago, when they worked together at a small Vancouver-based biotech called Inex Pharmaceuticals. With a Ph.D. in biochemistry, MacLachlan joined Inex in 1996, his first job after completing a postdoctoral fellowship in a gene lab at the University of Michigan.

Inex was cofounded by its chief scientific officer, Pieter Cullis, now 75, a long-haired physicist who taught at the University of British Columbia. From his perch there Cullis started several biotechs, cultivating an elite community of scientists that made Vancouver a hotbed of lipid chemistry.

Inex had a small-molecule chemotherapy drug candidate, but Cullis was also interested in gene therapy. His goal was to deliver large-molecule genetic material, like DNA or RNA, inside a lipid bubble so it could be safely ferried as medicine to the inside of a cell—something biochemists had dreamed about for decades but had been unable to accomplish.

Using a new method that mixed detergent with liquid, Cullis and his team at Inex successfully encapsulated small pieces of DNA in microscopic bubbles called liposomes. Unfortunately, the system could not consistently deliver bigger molecules, the type needed for gene therapy, in medically useful ways. They tried other approaches, including using ethanol, but didn't succeed.

"We assembled all the LNP [lipid nanoparticle] pieces at Inex, but we didn't get it to work" for genetic material, Cullis says.

Inex was a business, not a research lab, so it shifted its emphasis to the more promising chemotherapy drug. The gene therapy group was largely disbanded. MacLachlan ran what was left of it until, in 2000, he too decided to quit. Rather than let him completely walk away, Cullis persuaded MacLachlan to take the firm's delivery assets and spin them out in a new company. Thus was born Protiva Biotherapeutics (MacLachlan became chief scientific officer), in which Inex retained a minority stake. MacLachlan recruited Mark Murray, now 73, a longtime American biotech executive with a Ph.D. in biochemistry, to be CEO.

It wasn't long before two Protiva chemists, Lorne Palmer and Lloyd Jeffs, made a crucial discovery that led to a new mixing method. They put lipids dissolved in ethanol on one side of a physical T-connector apparatus, and, on the opposite side, genetic material dissolved in saltwater, then shot streams of the two solutions at each other. It was the moment they had been hoping for. The collision resulted in lipids forming a dense nanoparticle that instantly encapsulated the genetic material. The method was elegantly simple, and it worked.

"The various methods that had been used previously were all highly variable and ineffective," MacLachlan says. "Completely unsuitable for manufacturing."

The team he led quickly went on to develop a new lipid nanoparticle made of four specific kinds of lipids. Though these were among the lipids Inex had also been using in its experiments, MacLachlan's LNP had a dense core that differed significantly from the sac-like liposome bubbles developed by Inex. MacLachlan's team had figured out the specific ratios of the four kinds of lipids that worked best relative to one another. Everything was dutifully patented.

Moderna's and Pfizer's Covid vaccines use a type of gene therapy based on the messenger RNA molecule. Protiva's scientists, though, initially gravitated toward a different type of gene therapy using RNA interference, or RNAi. While mRNA instructs the body to create therapeutic proteins, RNAi aims to silence bad genes before they cause disease. With MacLachlan's delivery system in hand, Protiva started collaborating with Alnylam, a Cambridge, Massachusetts–based biotech, to make RNAi therapy viable.

In the midst of all this furious legal fighting, Hungarian biochemist Katalin Karikó showed up at MacLachlan's door. Karikó was early to grasp that MacLachlan's delivery system was key to mRNA therapies.

Meanwhile, MacLachlan's old company, Inex, was imploding after the FDA denied accelerated approval to its chemotherapy drug. Inex fired most of its staff and then—despite having spun off Protiva only a few years earlier—looped back to drug delivery. It too started working in partnership with Alnylam. In 2005 Cullis quit, leaving none other than MacLachlan's archrival Thomas Madden to run Inex's delivery efforts.

In 2006, Protiva and Alnylam published a landmark study in *Nature* demonstrating the first effective gene silencing in monkeys. The study used the delivery system MacLachlan's team had developed.

Alnylam went on to develop Onpattro, an RNAi drug used to treat nerve damage in adults with a certain hereditary condition. The drug would become the first RNAi medicine ever approved by the FDA. Regulatory filings show Alnylam used MacLachlan's delivery system for Onpattro—with one exception. For one of the four kinds of lipids, Alnylam used a modified version it developed with Thomas Madden.

• • •

In October 2008, Mark Murray, the CEO MacLachlan had recruited to run Protiva, stood in a room at Tekmira Pharmaceuticals, a small publicly traded shell company he had just taken over. Like Protiva, Tekmira had been created by Inex, which had finally burned out a year earlier, but not before transferring all its remaining assets to Tekmira. Assembled before Murray were some 15 former Inex scientists who had come along in the deal, including Thomas Madden.

"Unfortunately, we are not going to be able to keep you guys any longer," Murray told them.

Madden's firing was one result of a massive legal brawl sparked by the fact that both Inex and Protiva had been working separately with Alnylam on drug delivery. The dispute would continue for years. In each iteration, Murray and MacLachlan would accuse Madden and Cullis of having improperly taken their ideas. Cullis and Madden, offended by the accusations, denied them. Sometimes they sued back, claiming Murray and MacLachlan had acted wrongly.

The first round of litigation resulted in a 2008 settlement that saw Protiva take over Tekmira, with Murray as CEO, MacLachlan as chief scientific officer and Madden soon fired. Despite the bruising, Madden and Cullis founded a new company in 2009 to continue working with Alnylam. Tekmira responded by suing Alnylam, claiming the Massachusetts biotech conspired with Madden and Cullis to cheaply gain ownership of the delivery system developed by MacLachlan. Alnylam denied wrongdoing and—of course—filed counterclaims, saying it simply wanted to work with Madden and Cullis, who had created an improved variation of one of the four kinds of delivery-system lipids.

That round of the legal brawl was settled in 2012, with Alnylam paying Tekmira $65 million and agreeing to assign dozens of its patents back to Tekmira. Those patents included ones for the improved lipid that Madden had developed for Onpattro. Under the deal, Cullis and Madden's new company was granted a narrow license to use the MacLachlan delivery system to create new mRNA products from scratch.

Pfizer CEO Albert Bourla made $26 billion in revenue this year off the vaccine.

It was in the midst of all this furious legal fighting that Hungarian biochemist Katalin Karikó first showed up at MacLachlan's door. Karikó was early to grasp that MacLachlan's delivery system held the key to unlocking the potential of mRNA therapies. As early as 2006, she began sending letters to MacLachlan urging him to encase her groundbreaking chemically altered mRNA in his four-lipid delivery system. Embroiled in litigation, MacLachlan passed on her offer.

Karikó didn't give up easily. In 2013, she flew to meet with Tekmira's executives, offering to relocate to Vancouver and work directly under MacLachlan. Tekmira passed. "Moderna, BioNTech and CureVac all wanted me to work for them, but my number one choice, Tekmira, didn't," says Karikó, who took a job at BioNTech in 2013.

By this time, Moderna CEO Stéphane Bancel was also trying to solve the delivery puzzle. Bancel held discussions with Tekmira about collaborating, but talks stalled. At one point, Tekmira indicated it wanted at least $100 million upfront, plus royalties, to strike a deal.

Instead, Moderna partnered with Madden, who was still working with Cullis at their drug delivery company, Acuitas Therapeutics.

In February 2014, MacLachlan turned 50. His life partner, Karley Seabrook, lured him to Vancouver's Imperial theater, which was packed with friends and family. She surprised him in a wedding dress, and their two children greeted MacLachlan with cards that read WILL YOU MARRY MOMMY? Seabrook had never thought it important that they get married, but a brush with cancer had altered her perspective—and the wedding would alter his.

For the workaholic scientist, dealing with lawyers and endless corporate maneuvering had taken its toll. Feeling defeated, MacLachlan quit Tekmira in 2014. He sold his stock in the company, purchased a used Winnebago Adventurer for $60,000 and set off with his new wife, two kids and their dog for a 8,370km road trip across Canada.

"I was exhausted and demoralized," he says.

With MacLachlan gone, CEO Murray renamed Tekmira, calling it Arbutus BioPharma, and decided the company should focus on creating hepatitis B treatments with New York drug development company Roivant Sciences. Yet he held onto the patents for the four-lipid drug delivery system.

JAMEL TOPPIN FOR FORBES

Then Madden's company, Acuitas, sublicensed the delivery technology to Moderna for the development of an mRNA flu vaccine. Murray was confident Madden had no right to do so, and in 2016 he gave notice that he intended to terminate Acuitas' licensing agreement. Per custom, two months later, Acuitas sued in Vancouver, denying that it had violated any deal. On cue, Murray countersued, initiating a fresh round of legal combat. Importantly, though, this batch of lawsuits directly involved mRNA.

After battling for two more years, the parties settled. Murray terminated Thomas Madden's license to MacLachlan's delivery technology for any future medicines other than four products Moderna had already begun to develop (Murray also lost the rights to some of Madden's technology). Murray and Roivant then created another company, Genevant Sciences, specifically to house the intellectual property related to the four-lipid delivery system and commercialize it.

Some companies were quick to come onboard. Within a few months BioNTech CEO Şahin struck a deal with Genevant to use the delivery system for five of BioNTech's existing mRNA cancer programs. The companies also agreed to work together on five other mRNA programs targeting rare diseases. There was no provision in the agreement about using the delivery technology for something completely unforeseen—something like Covid-19.

Moderna CEO Stéphane Bancel first became a billionaire last April thanks to the vaccine. Moderna's market cap is now higher than General Motors' or Boeing's—and Bancel is worth some $11.9 billion.

Moderna pursued a different strategy. It filed lawsuits with the U.S. Patent and Trademark Office seeking to nullify a series of patents related to MacLachlan's delivery system, now controlled by Genevant. But in July 2020, as Moderna was pushing its vaccine through clinical trials, an adjudicative body largely upheld the most important patent claims. (Moderna is appealing.)

After the Moderna and Pfizer-BioNTech vaccines were authorized, Drew Weissman, a prominent mRNA researcher at the University of Pennsylvania, concluded in a peer-reviewed journal that both use delivery systems that are "similar to the Alnylam Onpattro product" but with a proprietary version of one of the lipids. Weissman noted both companies were using T-junction mixing.

Thomas Madden worked on the Pfizer-BioNTech vaccine delivery system and says he used enhanced versions of two of the four kinds of lipids. Madden says neither Onpattro nor the Pfizer-BioNTech vaccine would have been greenlighted by the FDA without his team's improvements to the lipids.

MacLachlan dismisses the new variations as "iterative innovation."

In a written statement to *Forbes,* Ray Jordan, Moderna's corporate affairs chief, stated, "I can confirm that we did take a license to Tekmira's IP for certain of our older products. But our newer products (including the Covid vaccine) have moved on with new technology."

BioNTech declined to comment. Mikael Dolsten, Pfizer's chief scientific officer, says the Pfizer-BioNTech vaccine is fully covered by patents and that in creating the first authorized mRNA product, Pfizer modified the delivery system to produce 3 billion doses annually.

"It's different to have a process that may work for a very small scale than a large scale, and some of the assumptions that may look similar are based on how the scientific field evolved and [on] contributions from many different sources," Dolsten says. "One needs to be careful in assuming that [if] things have similar names and similar molar ratios, it means it's the same thing."

Genevant declined to comment, but it could be fighting an uphill battle. In May, the Biden administration backed waiving intellectual property protection on Covid-19 vaccines. Ironically, such a move might benefit, not hurt, Moderna, BioNTech and Pfizer by preventing Genevant from making any claims on their gigantic vaccine cash pile.

That's just as well for Ian MacLachlan, whose role in what may be the most important medical advance in a century has been all but erased by the biotech industry. "I definitely feel I made a contribution," he says. "I have mixed feelings because of the way it's being characterized, and I know the genesis of the technology." F

Feeling defeated, MacLachlan quit Tekmira. He sold his stock, purchased a used Winnebago Adventurer for $60,000, and set off with his wife, two kids and their dog for a 8,370km road trip. "I was exhausted and demoralized."

STEVEN FERDMAN/GETTY IMAGES

ASIA ACCELERATES DIGITALIZATION AMID PANDEMIC

Governments and businesses step up digital transformation efforts as Covid-19 pandemic disrupts Asian economies.

With the Covid-19 outbreak wreaking havoc across industries and the global supply chain, governments and businesses around the world accelerated their digital transformation. Such initiatives have taken front seat in Asia—home to the world's factories—with the region stepping up investments on technological innovations needed to power the new normal post the pandemic.

China—a regional leader in adopting cutting-edge artificial intelligence, blockchain and cloud computing technologies—seeks to speed up the roll out of laws on protecting personal information as data analytics becomes prevalent in the country's pursuit of smart nation status. The new regulations are embodied in its 14th five-year plan, which runs from 2021 to 2025.

South Korea has pledged to invest US$94 million in 2021 to support the tech industry in AI and 5G networks as part of its "Digital New Deal" initiative. Japan's Growth Strategy Council has drafted a plan calling for the stimulation of innovation that involves digital transformation and grooming a greener society.

Countries across southeast Asia have launched their respective digitalization initiatives after the Association of Southeast Asian Nations (ASEAN) adopted the "Asean Digital Masterplan 2025"—a roadmap for the group's digital cooperation from 2021 to 2025—in January.

In Indonesia, the "Making Indonesia 4.0" roadmap is helping the country's industrial sector create new business models using digital technologies. Singapore's plan is embodied in its Digital Government Blueprint, which aims to better leverage data and harness new technologies. In Thailand, the government has introduced the "Thailand 4.0" economic model, which utilizes digitalization to enhance the quality of life in the country.

Malaysia's MyDIGITAL, which was launched in February, aims to transform the country into a regional leader in the digital economy. Under the blueprint, the government aims to attract US$16.5 billion worth of digital investments to boost the contribution of digital products and services to the country's GDP to 22.6% by 2025 from 19.1% currently.

Focus On Cyber Security

To coordinate and manage new digital investments, the Malaysian Digital Economy Corp. (MDEC) has teamed up with the Malaysian Investment Development Authority to set up the Digital Investment Office (DIO). Initiatives run by the DIO will be guided by MDEC's "Digital Investments Future5" strategy.

A key initiative in Malaysia's digital transformation strategy calls for the fortification of the country's cyber security defences. This is important given the growing threat of ransomware attacks—where cyber criminals steal data, encrypt and hold the digital infrastructure hostage until organizations pay the ransom, according to U.S.-based FireEye Mandiant.

The security specialist warns that governments and businesses urgently need to take prompt and preventive action to safeguard their critical infrastructure against cyberattacks. Organizations can no longer treat cyber security as an inconvenient byproduct of doing business but must be engineered from the ground up.

To do so effectively, organizations must conduct a comprehensive audit, identify the weak spots and work with experts who can implement automated solutions to deal with cyber security threats and breaches.

ASEAN Cooperation

Throughout its history, the ASEAN has been resilient against economic and geopolitical crisis that has affected member countries in the past and more so now that the group is battling the challenges of the lingering Covid-19 pandemic. To recover and thrive again, the region would need to strengthen their cooperation.

"The digital economy is critical," Lim Jock Hoi, ASEAN secretary general, said at a webinar organized by the CIMB Asean Research Institute in July 2020. "As you know, the pandemic has forced a lot of people to use digital technology and it is very refreshing to see that every one of us has adapted. In future, the economic driver will very much be in this area. We are looking at how best to use this as part of our post-pandemic recovery plan."

MALAYSIA
HEART OF DIGITAL ASEAN

The country is capitalizing on its regional connectivity, diversity of population and talent to attract digital investments and be the springboard for technology exports in the ASEAN region.

For over 500 years, Malaysia has been recognized as a trading powerhouse. Thanks to its strategic location along the Straits of Malacca and at the heart of the Association of Southeast Asian Nations (ASEAN) region, its trading credentials today continue to flourish, with foreign investments continuing to make its way into the country.

Approved foreign investments in manufacturing, services, and other sectors surged 95.6% to US$19 billion in the first quarter, according to the Malaysian Investment and Development Authority (MIDA).

"Malaysia has always been a trading nation," says Raymond Siva, Senior Vice President of Investment and Brand, and Chief Marketing Officer at the Malaysia Digital Economy Corporation (MDEC). "We are not only the center of the ASEAN region, we are multicultural, multilingual, have a digitally-skilled talent pool, ready infrastructure and mature ecosystem investors can rely on."

Raymond Siva, Senior Vice President of Investment and Brand, and Chief Marketing Officer at the Malaysia Digital Economy Corporation (MDEC)

Even as Malaysia continues to record strong investments, the country isn't resting on its laurels. Instead, MDEC is ensuring that it does not only attract traditional investments into Malaysia but more importantly, digital investments too.

> **"We have always been a prime mover as the heart of ASEAN for trade, so the logical next step is to become the heart of digital ASEAN."**
>
> **— Raymond Siva, Senior Vice President of Investment and Brand, and Chief Marketing Officer at the Malaysia Digital Economy Corporation (MDEC)**

Siva says this is why MDEC has teamed up with MIDA to form the Digital Investment Office (DIO) as a single window to ensure that investors can quickly gain investment approvals through a more streamlined process.

Complementing the establishment of the DIO, the two agencies have jointly launched a portal called "Malaysia Heart of Digital ASEAN," a single repository of information investors can rely on to discover how they can invest in Malaysia.

Since its inception in April this year, MDEC and MIDA have committed to promote quality investments, in line with the government's aspiration to attract US$16.5 billion worth of digital investments that could boost the contribution of digital products and services to Malaysia's GDP to 22.6% by 2025 from 19.1% currently.

Siva says the DIO and "Heart of Digital ASEAN" portal are a natural evolution of Malaysia's traditional trading strengths, as it has always been at the forefront of leveraging digital technologies as a catalyst for growth.

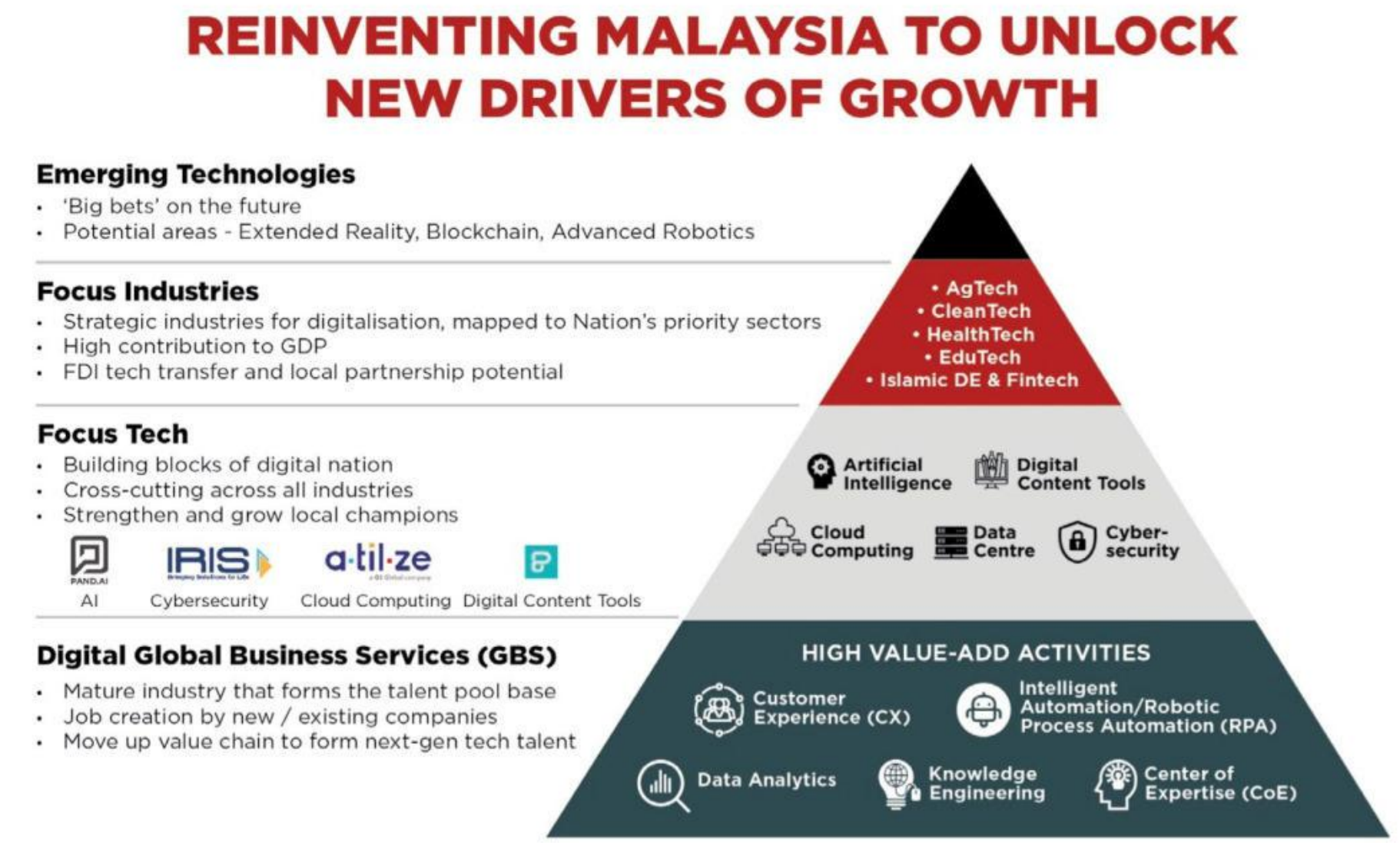
"MDEC is celebrating its 25th anniversary this year and after a quarter of a century, we are aiming at a refresh," Siva says. "We have always been a prime mover as the heart of ASEAN for trade, so the logical next step is to become the heart of digital ASEAN."

Strategy To Spur Growth

Underpinning MDEC's emphasis on digital investment is its "Digital Investments Future5" (DIF5) strategy. The five-year plan that runs from 2021 to 2025 focuses on five key thrusts aimed at attracting high-quality investments to boost Malaysia's digital economy. These thrusts are:

1. Attracting investments of RM50 billion (US$11.8 billion) in the digital economy;
2. Zooming in on five key industries, five focus and emerging technologies and the growth of digital global business services;
3. Attracting 50 globally renowned tech companies to land and expand in Malaysia;
4. Establishing five unicorn startups in Malaysia; and
5. Creating 50,000 high-value jobs in the Multimedia Super Corridor.

The five key industries that have been identified are: agriculture tech, health tech, Islamic digital economy and fintech, clean energy tech and education tech.



Siva says the digitalization of these industries is expected to significantly impact Malaysia's investments and jobs growth and contribute directly to Malaysia's GDP. It will also draw large corporations to form partnerships with local companies, which will result in knowledge and technology transfer.

The five focus technologies MDEC has identified are cloud computing, data center, artificial intelligence, cybersecurity and digital content tools. Complementing these are five emerging technologies: blockchain, drone technology, edge computing, extended reality and advanced robotics.

"All of the above technologies will increase the economic complexity of the nation and help develop new and existing economic clusters," says Siva. "This will create high value job opportunities and extend domestic economic linkages."

To further bolster Malaysia's digital investments, Siva says MDEC will also increase efforts to grow its digital global business services sector by encouraging the use of robotic process automation, data analytics and knowledge engineering.

"We are inviting investors to look at Malaysia because we are very focused on these five key sectors and technologies," says Siva. "By doing so, they will be able to collaborate with local ecosystem players and take advantage of Malaysia being the heart of digital ASEAN. From here, we believe they can export their technologies, products and services to other countries in the ASEAN region."

MDEC will establish more centers of expertise, which will enable the Malaysian workforce to move up the value chain and form the next generation of tech talents in the country's digital economy, he adds.

Increasing Investments

Malaysia continues to attract new investments this year, according to Siva. For example, data analytics company Clarivate recently established its global business center in Penang, creating between 150 and 200 new jobs for Malaysians.

Global real estate technology group Juwai IQI recently made Kuala Lumpur its headquarters for global research and development. This would eventually lead to the creation of a data and technology team comprising 1,000 employees.

In August, German industrial manufacturer Schott established its new IT competence center to coordinate IT activities across 45 production plants and seven business units worldwide.

Other global technology firms with operations in Malaysia include NTT, Hitachi Sunway Information Systems, transcosmos and DKSH CSSC, all of whom continue to show confidence in the country by increasing investments in Malaysia.

"We are witnessing an unprecedented growth in the digital economy and investment into this sector, but we want to do better," says Siva. "With the establishment of the DIO, Heart of Digital ASEAN portal and the successful execution of the DIF5 strategy, we will definitely increase our digital economy needle forward."

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FIREEYE MANDIANT

COPING WITH THE GROWING THREAT OF RANSOMWARE

Businesses urgently need to take prompt and preventive action to safeguard their critical infrastructure against cyberattacks.

Amid the challenges posed by the global pandemic, businesses over the past 18 months had to deal with a rise in ransomware attacks on their digital infrastructure. The threat has been heightened by hackers exploiting loopholes in hastily adopted work-from-home arrangements in response to Covid-19 restrictions.

The high-profile cyberattack on Colonial Pipeline in the U.S. earlier this year has proven to be a wake-up call for the global supply chain. Reflecting the extent of the problem, the Ransomware Task Force declared in April that ransomware "has become a serious security threat."

"Cybersecurity has become more prominent in political discourse and countries are looking at how to combat the problem at a national and international level," says Eric Hoh, President for Asia Pacific at FireEye Mandiant, a U.S.-based cybersecurity specialist. "Companies are being extorted for tens of millions of dollars as a result of cyber intrusions. The daily headlines alone showcase the significance and the growth of this problem in recent years."

Eric Hoh, President, Asia Pacific, FireEye Mandiant

Multifaceted Extortion

In the past year, there has been a notable shift by financially motivated cyber actors towards ransomware. The M-Trends 2021 report by FireEye Mandiant showed that 25% of Mandiant's incident response engagements in 2020 involved ransomware, up from 14% in the previous year. However, ransomware is only one part of a bigger problem.

"Ransomware is a single aspect of the multifaceted extortion that cyber criminals are levying against their victims," says Hoh. "It's no longer about just being denied access to your files and data. Now attackers are stealing the data before they encrypt it. That data could be intellectual property, customer data, HR files, or any other sensitive data."

Threat actors employ a variety of other extortion tactics to coerce victims into complying with demands. For instance, they can threaten to publish sensitive material that they have stolen from an organization, resulting in regulatory and legal consequences and potentially reputational damage.

"Attackers will coerce and shame victims, by contacting their customers, partners or even competitors," says Hoh. "Many organizations hear 'ransomware' and think of a malware that encrypts files. The reality though today is that these attacks can have far greater consequences than just being locked out from accessing your data."

Pandemic Boosts Cyber Risk

The global pandemic is also making it easier for threat actors to penetrate secure systems. With more people working from home, workers who were previously protected by enterprise grade security in their office networks are now only shielded by consumer grade security at home.

"Work from home arrangements have resulted in the attack surface growing significantly, and it has become harder for security operations teams to investigate potential security incidents if they take place on remote home networks," Hoh explains.

However, he noted that most organizations in Asia Pacific are well aware of the heightened risks and have used solutions such as "Remote Security Assessments" to assess and mitigate the threats.

The pandemic has also created new targets for cyberattacks in the form of organizations that are trying to fight the spread of coronavirus. In the past year there have been attacks on agencies that regulate vaccines as well as attempts to gain access to Covid-19 research.

Room For Improvement

The good news is that organizations are getting better at defending themselves, capable of finding and containing adversaries faster than in previous years. A metric known as "dwell time"—which measures the time between the moment of cyber intrusion to its discovery—has been reduced from over one year in 2011 to under one month in 2020, according to FireEye.

"It's a dramatic improvement but one month is still far too long to have an undetected intruder in your network, so there's still plenty of room for further improvement," says Hoh. "APAC organisations sometimes feel that their country might not be a target, or that their industry might be one that is excluded from cyberattacks, or that if a cyberattack happens it will only impact their IT systems and not their business. All of these are bad assumptions."

Identifying Security Gaps

Indeed, while the average organization has between 30 to 50 layers of security controls and may pass audits and regulatory compliance, many victims still fall prey to attackers based on incorrect assumptions. As such, businesses today are looking for a way to quantify and measure security effectiveness, rather than rely on assumptions.

"Security validation" which goes beyond traditional auditing and provides risk assurance, is a new tool cybersecurity experts are employing. "When a new type of attack makes headlines and management is asking: 'Are we vulnerable?' It's often hard to get a definitive answer to that question," says Hoh. "Security validation provides a way to get those answers and assurances."

Companies should also hire an "external red team" to assess if their tools, people and processes can defend the network and prevent the worst-case scenario following a ransomware attack.

"If you think your security program is in order and operating well, do this reality check as a first step," says Hoh. "It's easier said than done, there will be resistance internally. No one wants to be put in a position where they might fail. This isn't about winning or losing, it's about sparring to build muscle."

Advanced Automated Solutions

Automation is emerging as a cutting-edge solution against cyberattacks. While cybersecurity automation has existed for some time in the form of Security Orchestration Automation and Response (SOAR), organizations are now going beyond automating security processes and starting to automate security analysis.

While this is a harder outcome to achieve, there are new offerings which complement SOAR and provide automated analysis such as the Mandiant Automated Defense.

"Having automated analysis that works at machine speed, never gets tired, never suffers from alert fatigue and can work 24 x 7 x 365 is a different type of automation that helps to counterbalance the challenges organizations face from the shortage of available human talent," says Hoh.

Beyond Technology

However, technology alone will not effectively mitigate cyber risks. Cybersecurity services should also be part of the overall approach.

"Planning for an event that you've not previously experienced can be quite challenging, but not if you get help from those who have the experience," says Hoh. "A ransomware defense assessment won't add to your technology stack, but it goes a long way in making you cyber resilient."

Looking ahead, Hoh expects ransomware and cyberattacks to increase in the coming years, as businesses aggressively drive digital transformation.

"Dependence on digital services will grow as these services become foundational instead of just convenient and the cost we pay when something goes wrong increases proportionally," says Hoh. "In the future, the arms race will continue between attackers and defenders as the stakes get higher."

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AMERICA'S MOST SUCCESFUL WOMEN ENTREPRENEURS

THE LIST • U.S. RICHEST SELF-MADE WOMEN

The fortunes of America's richest self-made women in our seventh annual ranking soared 31% to $118 billion amid a stock-market boom. A record 26 are now billionaires, including pop-star mogul Rihanna and 23andMe's Anne Wojcicki. Two-thirds of the 100 founded or cofounded a company; 26 are CEOs. Fifteen are newcomers, including singer and investor Dolly Parton and former model Cindy Crawford. The cutoff for admission climbed to $225 million, up from $150 million last year.

ILLUSTRATIONS BY **VIKTOR MILLER-GAUSA** FOR FORBES

(From left) Rihanna, Anne Wojcicki, Neha Narkhede

1. DIANE HENDRICKS

$11 billion ⬆

SOURCE: **Roofing**

AGE: **74** • RESIDENCE: **Afton, WI**

SELF-MADE SCORE: 9

Hendricks is the first self-made woman in America to boast an 11-figure fortune thanks to a $3 billion uptick in her net worth since last year; she runs and owns roofing distributor ABC Supply, which reeled in a record $12.1 billion in revenue in 2020. The Wisconsin native, who co-founded ABC in 1982, is turning an old Coca-Cola plant in Indianapolis into the Bottleworks District, a $300 million project that includes a food hall, boutique hotel and movie theater.

2. JUDY FAULKNER

$6.5 billion ⬆

SOURCE: **Health IT**

AGE: **77** • RESIDENCE: **Madison, WI**

SELF-MADE SCORE: 8

Her medical records company, Epic Systems, booked $3.3 billion in 2020 revenue despite giving away some $500 million worth of Covid-related software to customers during the pandemic. Faulkner owns 47% of the Verona, Wisconsin, business that she founded in a basement in 1979. Her family foundation, Roots & Wings, plans to double its giving this year to $30 million.

3. MEG WHITMAN

$6.3 billion ⬆

SOURCE: **eBay**

AGE: **64** • RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 6

Whitman's latest venture, short-form streaming platform Quibi, flamed out last year after only six months in operation. Still, the Silicon Valley veteran's fortune continues to grow thanks to stakes in eBay and PayPal, which are up 34% and 61%, respectively, since September. While she has yet to take on a new executive role, Whitman joined General Motors' board in March.

4. JUDY LOVE

$5.2 billion ⬆

SOURCE: **Retail, gas stations**

AGE: **84** • RESIDENCE: **Oklahoma City**

SELF-MADE SCORE: 9

She and her husband, Tom, started truck-stop chain Love's Travel Stops & Country Stores in 1964. The two ran the company until 1975, when Judy returned to college to complete her interior-design degree. The $20 billion (estimated revenue) business, which is run by two of her children, opened 38 stores in 2020 and another 20 in the first six months of 2021.

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

5. MARIAN ILITCH

$4.4 billion ⬆

SOURCE: **Little Caesars**

AGE: **88** • RESIDENCE: **Bingham Farms, MI**

SELF-MADE SCORE: 9

Stay-at-home orders were a boon for pizza makers like Ilitch's Little Caesars. Mrs. I, as she's known, cofounded the chain with her husband, Mike (d. 2017), in 1959; sales hit a record $4.5 billion last year. In April, Ilitch inked a deal to buy an Atlantic City casino; the family also owns MotorCity Casino and the Red Wings hockey team.

6. JOHNELLE HUNT

$4.1 billion ⬆

SOURCE: **Trucking**

AGE: **89** • RESIDENCE: **Fayetteville, AR**

SELF-MADE SCORE: 7

Hunt gave $5 million to a 25-hectare nature center bearing her family's name that opened in December in her native Arkansas. The state's richest woman, Hunt owns 17% of J.B. Hunt Transport Services, the $9.6 billion (2020 revenue) trucking company she cofounded in 1969 with her late husband, J.B. (d. 2006).

6. THAI LEE

$4.1 billion ⬆

SOURCE: **IT provider**

AGE: **62**

RESIDENCE: **Austin, TX**

SELF-MADE SCORE: 9

Her $11 billion (2020 sales) IT provider, SHI International, is cashing in on increased demand for remote-work technology, with sales up 4% year to year. A South Korean immigrant, Lee cofounded SHI in 1989 with her now ex-husband after purchasing a struggling software reseller for less than $1 million. She remains CEO of SHI and has a minority stake in biopharmaceutical developer VBL Therapeutics.

8. LYNDA RESNICK

$4 billion ⬆

SOURCE: **Agriculture**

AGE: **78** • RESIDENCE: **Beverly Hills, CA**

SELF-MADE SCORE: 8

Drought-ridden California land continues to produce pistachios, almonds and pomegranates for the nearly $5 billion (estimated sales) Wonderful Company, cofounded and co-owned by Resnick and her husband, Stewart. Lynda leads marketing and also spends her time on philanthropy and health programs for Wonderful's workforce. In 2019, the couple pledged $750 million to Caltech for climate-change research, the largest gift in the university's history.

Oprah Winfrey

9. GAIL MILLER

$3.2 billion ⬆

SOURCE: **Car dealerships**

AGE: **77** • RESIDENCE: **Salt Lake City**

SELF-MADE SCORE: 7

Last fall, Miller and her family sold a majority stake in U.S. basketball team Utah Jazz for nearly $1.7 billion to tech billionaire Ryan Smith but retained a minority interest. Miller still runs the Larry H. Miller Group, which she cofounded with husband Larry (d. 2009) in 1979. It owns more than 60 car dealerships and 16 movie theaters; in January, it acquired nursing home chain Advanced Health Care Corporation for an undisclosed sum.

10. DORIS FISHER

$2.9 billion ⬆

SOURCE: **Gap**

AGE: **89** • RESIDENCE: **San Francisco**

SELF-MADE SCORE: 7

Fisher cofounded Gap (short for "generation gap") with her late husband, Don (d. 2009), 52 years ago after the couple struggled to find jeans that fit him. In July, Gap announced it would permanently close all its stores in the U.K. and Ireland. The retailer launched its much-anticipated collaboration with Kanye West's Yeezy line in June to rave reviews.

10. ALICE SCHWARTZ

$2.9 billion ⬆

SOURCE: **Biotech**

AGE: **95** • RESIDENCE: **El Cerrito, CA**

SELF-MADE SCORE: 8

With $720 in savings, Schwartz and her husband, David (d. 2012), launched Bio-Rad Laboratories in 1952. In the years since, Bio-Rad has flourished by selling chemicals and components that are instrumental to lab research. At age 95, Schwartz still sits on Bio-Rad's board and has an 11% stake in the $2.5 billion (2020 sales) company run by her son Norman Schwartz.

12. OPRAH WINFREY ⬆

$2.7 billion ⬆

SOURCE: **Television shows**

AGE: **67** • RESIDENCE: **Montecito, CA**

SELF-MADE SCORE: 10

The richest woman in entertainment's blockbuster sit-down with Prince Harry and Meghan Markle captivated more than 70 million people around the globe in March. She's also making moves off-camera: In December, she sold 20.5% of her Oprah Winfrey Network to Discovery in exchange for $35 million worth of Discovery stock; she continues to own 5% of the network.

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

13. ELAINE WYNN

$2.2 billion ⬆

SOURCE: **Casinos, hotels**

AGE: **79** • RESIDENCE: **Las Vegas**

SELF-MADE SCORE: 8

The largest individual shareholder of Wynn Resorts is up $400 million since last year, thanks to its stock having surged 48% as the gambling industry gradually recovered from the pandemic. She cofounded the company in 2002 with her ex-husband, Steve Wynn, who resigned amid a sexual harassment scandal in 2018. (He denied the allegations.)

14. PEGGY CHERNG

$2 billion ⬆

SOURCE: **Fast food**

AGE: **73** • RESIDENCE: **Las Vegas**

SELF-MADE SCORE: 9

Cherng and her husband, Andrew, founded Panda Express, their 2,200-location fast food chain, in 1982 after immigrating to the U.S. from China. She and her husband are co-CEOs. Last year the couple donated $5 million to the University of Nevada, Las Vegas to establish the nation's first academic program in fast-casual restaurant management in the U.S.

15. SHERYL SANDBERG

$1.9 billion ⬆

SOURCE: **Facebook**

AGE: **51** • RESIDENCE: **Menlo Park, CA**

SELF-MADE SCORE: 6

According to a new book, the Facebook chief operating officer's relationship with Mark Zuckerberg has been strained by disagreements over the social media company's role in policing the platform's content. Not that the alleged rift, which Facebook denies, is hurting business. Revenue hit a record $86 billion in 2020—powered by the ad business that Sandberg oversees.

16. RIHANNA

$1.7 billion ⬆

SOURCE: **Cosmetics, music**

AGE: **33** • RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 10

New information on her 50% stake in Fenty Beauty—her cosmetics line co-owned with French luxury-goods giant LVMH—puts Rihanna into the billionaire ranks. In July 2020, she launched Fenty Skin with LVMH. In February her lingerie line, Savage x Fenty, raised $115 million in funding at a $1 billion valuation. Her high-fashion joint venture with LVMH—Fenty—didn't do as well, halting operations in February.

16. JAYSHREE ULLAL

$1.7 billion ⬆

SOURCE: **Computer networking**

AGE: **60**

RESIDENCE: **Saratoga, CA**

SELF-MADE SCORE: 6

Shares of Arista Networks, the cloud networking company she's led as CEO since 2008, are up nearly 80% since last year's list amid strong earnings. Born in London and raised in India, Ullal spent 15 years at Cisco before taking the helm at Arista. She sits on the board of cloud computing company Snowflake, which went public in September 2020.

18. SAFRA CATZ

$1.6 billion ⬆

SOURCE: **Software**

AGE: **59** • RESIDENCE: **Redwood City, CA**

SELF-MADE SCORE: 6

In 2020, Catz moved the headquarters of software giant Oracle from Redwood City, California, to Austin, Texas. The Israeli native has been sole CEO since 2019, having become co-CEO in 2014. Prior to Oracle, Catz covered the software industry on Wall Street for 14 years.

19. JENNY JUST

NEW

$1.5 billion

SOURCE: **Fintech**

AGE: **53** • RESIDENCE: **Winnetka, IL**

SELF-MADE SCORE: 8

The first-time billionaire started out as an options trader in Chicago, then cofounded options trading firm Peak6 with the man who later became her husband. They have since funneled the profits from trading into more than a dozen businesses. The star investment: Apex Clearing, which handles the back-end trading and technology for fintechs such as SoFi and Ally. It's slated to go public in a SPAC merger that values the firm at $4.7 billion.

20. EREN OZMEN

$1.4 billion ⬆

SOURCE: **Aerospace**

AGE: **62** • RESIDENCE: **Reno, NV**

SELF-MADE SCORE: 9

The Turkish immigrant co-owns aerospace and defense contractor Sierra Nevada Corp. with her husband, Fatih. Their Dream Chaser spacecraft has a contract with NASA for at least seven missions to deliver cargo to the International Space Station. In April, the Ozmens spun off their space operations into a stand-alone company, Sierra Space, with ambitions to build a new commercial space station in five years.

21. WEILI DAI

$1.3 billion ⬆

SOURCE: **Semiconductors**

AGE: **59** • RESIDENCE: **Las Vegas**

SELF-MADE SCORE: 8

A native of Shanghai, Dai started semiconductor company Marvell Technology with her husband, Sehat Sutardja, in 1995. She was president until 2016, when she and Sutardja were forced out due to an internal accounting investigation—though no evidence of fraud was found. In 2018, Dai cofounded artificial intelligence startup MeetKai, which released an AI-based assistant in May.

21. ROBYN JONES

$1.3 billion ⬆

SOURCE: **Insurance**

AGE: **59** • RESIDENCE: **Fort Worth, TX**

SELF-MADE SCORE: 9

Shares of Texas-based Goosehead Insurance, the firm she cofounded with her husband, Mark, in 2003, are up 28% since September, boosting the fortune of this stay-at-home mom turned startup founder who serves as Goosehead's vice chairman. She and Mark, the CEO, own 42% of the business, which nearly doubled its net profit to $19 million on $117 million in sales in 2020.

21. WHITNEY WOLFE HERD

$1.3 billion ⬆

SOURCE: **Dating app**

AGE: **32** • RESIDENCE: **Austin, TX**

SELF-MADE SCORE: 8

The founder of dating app Bumble became, at age 31, the world's youngest self-made female billionaire in February after taking the women-focused app public. She founded Bumble in 2014 with financing from Russian billionaire Andrey Andreev, who launched Europe-based dating site Badoo in 2006. Andreev sold his Bumble stake to Blackstone Group in 2019 after a *Forbes* investigation revealed a toxic workplace at Badoo (which Andreev denied).

24. KIM KARDASHIAN WEST

$1.2 billion ⬆

SOURCE: **Cosmetics, reality TV**

AGE: **40** • RESIDENCE: **Hidden Hills, CA**

SELF-MADE SCORE: 7

The reality TV star turned influencer turned beauty mogul's latest headline-grabbing venture: shapewear and loungewear label Skims. In April, the two-year-old company raised money at a $1.6 billion valuation, and in June it became the official undergarments supplier for female members of Team USA at the Olympics in Tokyo.

Michelle Zatlyn

25. ANNE WOJCICKI

$1.1 billion ⬆

SOURCE: **DNA testing**

AGE: **48** • RESIDENCE: **Los Altos, CA**

SELF-MADE SCORE: 7

Wojcicki moves up from No. 49 last year. The reason: 23andMe, the genetic-testing company she cofounded and leads, went public in June in a merger with a SPAC sponsored by U.K. billionaire Richard Branson's Virgin Group. The deal made Wojcicki a billionaire. Next step: to turn the loss-making company profitable.

26. NEERJA SETHI

$1 billion ⬌

SOURCE: **IT consulting, outsourcing**

AGE: **66** • RESIDENCE: **Fisher Island, FL**

SELF-MADE SCORE: 8

Sethi and husband Bharat Desai cofounded IT consulting and outsourcing firm Syntel in 1980 from their apartment in Troy, Michigan. In 2018, the couple sold it to French IT firm Atos SE for $3.4 billion. Sethi did not join Atos after the acquisition and has kept a low profile since.

27. CARYN SEIDMAN-BECKER

NEW

$990 million

SOURCE: **Airport security**

AGE: **48**

RESIDENCE: **New York City**

SELF-MADE SCORE: 8

Seidman-Becker is chairman and CEO of Clear Secure, which helps people speed through security checkpoints using identification technology. A former hedge fund manager, she and a colleague bought Clear's predecessor out of bankruptcy in 2010 for $5.9 million; it is now in 38 airports and 26 venues in the U.S. She owns 20% of the $230 million (sales) company, which she took public in June.

28. MICHELLE ZATLYN ↑

NEW

$980 million

SOURCE: **Cybersecurity**

AGE: **42** • RESIDENCE: **San Francisco**

SELF-MADE SCORE: 8

Zatlyn cofounded web infrastructure and security company Cloudflare in 2009 and helped take it public a decade later. Today, the firm says it blocks 70 billion cyberthreats a day for more than 4 million customers. With the stock near record highs, Zatlyn, who owns 5% of the company, briefly became a billionaire in early July.

29. NEHA NARKHEDE

$925 million ⬆

SOURCE: **Software**

AGE: **36** • RESIDENCE: **Palo Alto, CA**

SELF-MADE SCORE: 8

A former LinkedIn software engineer, Narkhede left in 2014 to cofound Confluent, a cloud company that helps organizations process large amounts of data. Confluent debuted on the Nasdaq in June at a $9.1 billion valuation. Narkhede stepped down from her roles as chief technology and product officer in 2019 but still serves on Confluent's board.

30. JACQUELINE RESES

NEW

$920 million

SOURCE: **Payments**

AGE: **51**

RESIDENCE: **Woodside, CA**

SELF-MADE SCORE: 6

Reses left payments firm Square last year after five years leading Square Capital, its small-business loan division. During the pandemic, Square Capital facilitated $850 million in Paycheck Protection Program loans to 80,000 businesses across the country. Reses owns 0.4% of Square's stock. Earlier in her career, she spent a decade working at private equity investor Apax Partners and also worked as chief development officer at Yahoo.

31. TORY BURCH

$900 million ⬆

SOURCE: **Fashion**

AGE: **55** • RESIDENCE: **New York City**

SELF-MADE SCORE: 7

The fashion icon is opening a new flagship store in Manhattan's SoHo neighborhood, plus 15 new shops in China. An art history graduate, Burch worked for Ralph Lauren and Vera Wang before launching her own boutique in 2004. It's expected to sell an estimated $1.5 billion worth of preppy-chic apparel, footwear, watches, accessories and fragrances this year.

32. CLAIRE HUGHES JOHNSON

$860 million ⬆

SOURCE: **Payments software**

AGE: **48** • RESIDENCE: **Milton, MA**

SELF-MADE SCORE: 6

Hughes Johnson joined Stripe in 2014 after a decade-long stint at Google. Her fortune more than doubled from last year, thanks to a March funding round that valued the payments firm at $95 billion, making it the most valuable venture-backed company in the U.S. Hughes Johnson is also an active angel investor in enterprise tech startups, such as software firms Coda, ChartHop and Humaans.

33. ANNE DINNING

$850 million ⬆

SOURCE: **Hedge funds**

AGE: **58** • RESIDENCE: **New York City**

SELF-MADE SCORE: 6

Dinning joined quantitative hedge fund firm D.E. Shaw after getting her doctorate at New York University in 1990. The Seattle native is now part of a six-person committee that jointly runs D.E. Shaw. Dinning sits on the boards of New York City anti-poverty charity Robin Hood and education nonprofit Math for America.

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

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34. SUSAN WOJCICKI

$815 million ⬆

SOURCE: **Google**

AGE: **53** • RESIDENCE: **Los Altos, CA**

SELF-MADE SCORE: 6

She joined Google in 1999 as employee number 16 and became CEO of subsidiary YouTube in 2014. YouTube's revenue soared 30% in 2020, but the video platform also faced criticism over hosting election misinformation. After the January 6 U.S. Capitol riot, Wojcicki suspended Donald Trump's YouTube channel and vowed to uphold the ban until the threat of violence decreased. Her sister is Anne Wojcicki *(No. 25)*.

35. MARISSA MAYER

$800 million ⬆

SOURCE: **Google, Yahoo**

AGE: **46** • RESIDENCE: **Palo Alto, CA**

SELF-MADE SCORE: 6

Mayer was one of Google's earliest employees but made a name for herself when she left the search giant in 2012 to become the CEO of Yahoo. She stepped down shortly after Verizon acquired Yahoo in 2017. Now her efforts are focused on Sunshine, her startup—formerly known as Lumi Labs—which released an address-book app called Sunshine Contacts late last year.

35. KENDRA SCOTT

$800 million ⬆

SOURCE: **Jewelry**

AGE: **47** • RESIDENCE: **Austin, TX**

SELF-MADE SCORE: 7

In February, Scott stepped down as CEO of her eponymous jewelry business, which she launched out of a spare bedroom in 2002. She remains executive chairwoman of the company, which has more than 100 stores. During the pandemic, stores shut down temporarily, but online sales helped compensate. Revenue in 2020 was an estimated $360 million.

37. APRIL ANTHONY

$760 million ⬆

SOURCE: **Health care**

AGE: **54** • RESIDENCE: **Dallas**

SELF-MADE SCORE: 8

Anthony stepped down in April as CEO of the health-and-hospice division of Encompass Health. She built the business by scooping up 17 distressed home-healthcare providers for under $500,000 between 1998 and 2001, then sold it for $750 million in 2014 to publicly traded medical provider HealthSouth, which took the Encompass name. The move comes amid Encompass' potential spinoff of the division into a separate company.

37. KATRINA LAKE →

$760 million ⬆

SOURCE: **Online retail**

AGE: **38** • RESIDENCE: **San Francisco**

SELF-MADE SCORE: 8

The founder of online personal-shopping service Stitch Fix, which sent curated outfits to more than 3.5 million customers last year, briefly became a billionaire in January after shares of the $1.7 billion (2020 revenue) company nearly tripled in three months. In April, Stitch Fix announced, in a surprise move, that Lake would step down as CEO in August and become executive chair.

39. SARA BLAKELY

$750 million ⬆

SOURCE: **Spanx**

AGE: **50** • RESIDENCE: **Atlanta**

SELF-MADE SCORE: 8

Her Spanx pioneered the shapewear market but now faces fierce competition from upstarts like No. 24 Kim Kardashian West's Skims. The pandemic, which led to the cancellation of formal events around the world, dealt another blow to the business. Once the world's youngest self-made female billionaire, Blakely is reportedly exploring a potential sale of her Atlanta-based firm.

39. SHEILA JOHNSON

$750 million ⬇

SOURCE: **Cable TV**

AGE: **72** • RESIDENCE: **The Plains, VA**

SELF-MADE SCORE: 9

The Black Entertainment Television cofounder is breaking ground on 49 luxury homes near her Salamander Resort & Spa in Middleburg, Virginia—one of five properties she operates in Virginia, South Carolina, Jamaica and Florida. Since selling BET to Viacom in 2001 for $3 billion, Johnson has also poured some money into U.S. basketball teams Washington Mystics and Washington Wizards, and hockey team Washington Capitals.

39. RESHMA SHETTY

$750 million ⬆

SOURCE: **Biotechnology**

AGE: **41** • RESIDENCE: **Boston**

SELF-MADE SCORE: 8

She cofounded Ginkgo Bioworks, one of the earliest synthetic biology startups, with a professor and three fellow MIT Ph.D.s including her husband, Barry Canton. Ginkgo's goal was to create tools to help scientists work faster and easier. In May, it agreed to go public in a $17.5 billion deal with a SPAC founded by former Hollywood exec Harry Sloan; the pact has yet to close.

Katrina Lake

42. ANASTASIA SOARE

$730 million ⬆

SOURCE: **Cosmetics**

AGE: **63**

RESIDENCE: **Beverly Hills, CA**

SELF-MADE SCORE: 9

A Romanian immigrant, Soare launched her cosmetics line, Anastasia Beverly Hills, in 2000. She is known as the eyebrow sculptor to the stars, but the popularity of her products has fallen in recent years. While Fitch Ratings warned for the second year in a row that the company's capital structure—with $635 million in debt and lagging growth—is unsustainable, analysts predicted rebounding sales in 2021 and 2022.

43. KIT CRAWFORD

$725 million ⬆

SOURCE: **Clif Bar**

AGE: **62** • RESIDENCE: **St. Helena, CA**

SELF-MADE SCORE: 8

Crawford and her husband, Gary Erickson, stepped down as co-CEOs of Clif Bar in 2020, but still serve as board members and own an estimated 80% of the energy bar maker. Today, Crawford is focused on running the Clif Family Winery in Napa Valley and venture capital firm White Road Investments, which invests in sustainable and active-lifestyle companies.

SOARE: TIMOTHY ARCHIBALD

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

43. PAMELA M. LOPKER ↓

NEW

$725 million

SOURCE: **Software**

AGE: **71** • RESIDENCE: **Carpinteria, CA**

SELF-MADE SCORE: 8

Lopker founded software company QAD Inc. in 1979. She debuted on The Forbes 400 list 25 years ago as America's richest self-made woman. A year later, she took her company public and soon fell out of the ranking. Since September 2020, QAD shares have doubled in value, and in June, private equity firm Thoma Bravo announced plans to acquire QAD for $2 billion, a 10% premium to its value.

43. NANCY ZIMMERMAN

$725 million ↑

SOURCE: **Hedge funds**

AGE: **58** • RESIDENCE: **Boston**

SELF-MADE SCORE: 8

A pioneer of absolute return investing, Zimmerman is the cofounder of Boston-based hedge fund manager Bracebridge Capital. The firm manages some $12 billion in net assets for endowments, foundations and family offices. During the pandemic, the Goldman Sachs alum helped fund a pilot program to expand testing for residents, staff and visitors at affordable senior housing complexes.

46. DONNA CARPENTER

$700 million ↑

SOURCE: **Snowboards**

AGE: **57** • RESIDENCE: **Stowe, VT**

SELF-MADE SCORE: 8

Carpenter is the owner of Burton, the snowboarding gear and apparel giant she cofounded in 1977 alongside her husband, Jake Burton Carpenter (d. 2019). The Burlington, Vermont–based company has estimated revenue of $300 million, nearly 1,000 employees—and more than 30% of the global snowboarding market. Carpenter stepped down as co-CEO in 2020 and now chairs the company.

47. KATHY FIELDS

$675 million ↓

SOURCE: **Skin care**

AGE: **63** • RESIDENCE: **San Francisco**

SELF-MADE SCORE: 8

47. KATIE RODAN

$675 million ↓

SOURCE: **Skin care**

AGE: **66** • RESIDENCE: **San Francisco**

SELF-MADE SCORE: 8

The net worths of the dermatologist duo behind the Rodan + Fields skincare line have dropped by more than half since peaking at $1.5 billion apiece in 2019. The army of independent sales consultants hawking Rodan + Fields goods has dropped 15% since 2018, and revenue fell from $1.6 billion in 2017 to less than $1.1 billion last year. The company says ongoing class-action lawsuits against it involving hit eyelash product Lash Boost are near resolution, but its insurer filed suit in July, seeking to avoid paying out claims. Rodan + Fields will soon respond in court.

49. THERESE TUCKER

$670 million ↑

SOURCE: **Software**

AGE: **59** • RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 8

Tucker stepped down in January as CEO of BlackLine, the accounting-automation software company she founded in 2001, and transitioned to executive chair. She sold a majority stake to private equity investors in 2013. She still owns just under 8% of the $352 million (2020 sales) company.

50. HEATHER HASSON →

NEW

$625 million

SOURCE: **Health care apparel**

AGE: **39** • RESIDENCE: **Las Vegas**

SELF-MADE SCORE: 8

After failing to find comfortable and stylish scrubs for a friend at a medical supply store, the former handbag designer set out to develop some herself. Founded in 2013 with Trina Spear *(No. 52)*, Figs saw its revenue more than double to $263 million in 2020 as its customers—essential workers—found themselves on the frontlines of the pandemic. Hasson is co-CEO and owns 10% of Figs, which the duo took public in May.

51. KYLIE JENNER

$620 million ↓

SOURCE: **Cosmetics**

AGE: **23** • RESIDENCE: **Hidden Hills, CA**

SELF-MADE SCORE: 7

Declining sales due to the pandemic and a break with her former manufacturer—which sued her company and its partner, Coty, in a dispute over trade secrets in a suit that is being settled—dented Jenner's beauty line over the past year. Kylie Cosmetics relaunched in July with new formulas that are vegan and free of parabens and gluten. Jenner launched the line in 2015 and sold a 51% stake to Coty in 2020 for $600 million.

Pamela M. Lopker

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Trina Spear *(left)* and Heather Hasson

52. THERESIA GOUW

$600 million ↔

SOURCE: **Venture capital**

AGE: **49** • RESIDENCE: **Palo Alto, CA**

SELF-MADE SCORE: 9

Gouw, a longtime venture capitalist, helps run Acrew Capital, the multigenerational firm she cofounded in 2019. She got her start as the first female investor at Palo Alto–based Accel Partners in the 1990s. From there, she cofounded Aspect Ventures in 2014. Early bets that have paid off include investments in security firm Cato Networks and HotelTonight, now part of Airbnb.

52. TRINA SPEAR ↑

NEW

$600 million

SOURCE: **Health care apparel**

AGE: **37** • RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 8

When Spear met Heather Hasson *(No. 50)* through a mutual friend in 2012, she wasn't planning on leaving her successful asset-management job at Blackstone. But days later, she flew to Los Angeles to discuss Hasson's idea for a fashion-focused, functional line of scrubs, and less than six months later, she liquidated her 401(k) to cofound the business. She is co-CEO of Figs, which went public in May.

52. LISA SU

$600 million ↑

SOURCE: **Semiconductors**

AGE: **52** • RESIDENCE: **Austin, TX**

SELF-MADE SCORE: 6

A Taiwanese immigrant, Su got an electrical engineering Ph.D. from MIT, where she first fell in love with semiconductors. She joined chipmaker Advanced Micro Devices in 2012, becoming CEO two years later. Since taking the top job, she has led the Santa Clara, California–headquartered firm to a dramatic turnaround—with shares surging more than 25-fold to a market capitalization of over $130 billion.

52. MARY WEST

$600 million ↑

SOURCE: **Telemarketing**

AGE: **75** • RESIDENCE: **San Diego**

SELF-MADE SCORE: 8

She founded telecom business West Corp. in 1986. Husband Gary joined the next year; they sold most of their stake in 2006 for $1.4 billion. They have since given more than $400 million to help improve health care for seniors through nonprofits including their own West Health. During the pandemic, West Health funded food delivery to low-income seniors and PPE for frontline health care workers.

56. MARTINE ROTHBLATT

$585 million ↑

SOURCE: **Pharmaceuticals**

AGE: **66** • RESIDENCE: **Satellite Beach, FL**

SELF-MADE SCORE: 8

Rothblatt founded United Therapeutics in 1996 after her daughter was diagnosed with a deadly blood pressure disease. Six years later, the U.S. Food & Drug Administration approved United Therapeutics' first drug against the disease, saving her daughter's life. In the years since, her company has gotten four more drugs approved to treat pulmonary arterial hypertension and pediatric neuroblastoma. Before becoming a biotech CEO, Rothblatt cofounded Sirius Satellite Radio.

57. ALYSSA HENRY

NEW

$555 million

SOURCE: **Payments**

AGE: **50**

RESIDENCE: **Piedmont, CA**

SELF-MADE SCORE: 6

After seven years as an executive at Amazon Web Services, the tech giant's cloud services provider, Henry joined payments processor Square in 2014 and quickly rose to lead its Seller division. She has transformed the product from a piece of hardware—the ubiquitous "little white reader" many businesses use—into a system with software to help businesses manage payroll, loyalty programs and marketing.

58. MADONNA

$550 million ↔

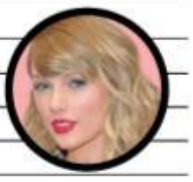
SOURCE: **Music**

AGE: **62** • RESIDENCE: **New York, NY**

SELF-MADE SCORE: 9

The Queen of Pop hasn't released a new album in two years and was forced to cancel the end of her "Madame X" tour last spring. A film version of the show will still debut on ViacomCBS's Paramount+ this October.

58. TAYLOR SWIFT



$550 million ↑

SOURCE: **Music**

AGE: **31**

RESIDENCE: **Nashville, TN**

SELF-MADE SCORE: 8

When music mogul Scooter Braun sold the master recordings of Swift's first six albums in October for a reported $300 million, she didn't get a dime. But the singer-songwriter, who owns composition rights for her work, is rerecording her old songs and owns the masters to her three latest albums, including two released in the past year, *Folklore* and *Evermore*. Her publishing catalog alone is worth an estimated $200 million.

SWIFT: NEILSON BARNARD/GETTY IMAGES

CHANGE IN WEALTH KEY: ↑ UP ↓ DOWN ↔ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

60. VICTORIA ZOELLNER

$510 million ↓

SOURCE: **Hedge funds**

AGE: **78** • RESIDENCE: **Alpine, NJ**

SELF-MADE SCORE: 8

A former Wall Street portfolio analyst, Zoellner cofounded New Jersey–based hedge fund Alpine Associates Management in 1976 with her late husband, Robert Zoellner (d. 2014). Alpine now manages $2.2 billion in net assets and retains its original investors from 45 years ago; Zoellner, who no longer oversees the day-to-day operations, is chairwoman.

61. JAMIE KERN LIMA

$500 million ↑

SOURCE: **Cosmetics**

AGE: **44** • RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 9

The former IT Cosmetics founder and co-CEO sold the business to L'Oréal in a $1.2 billion deal in 2016. She has invested some of the estimated $400 million proceeds into 15 mostly women-led startups. A former morning news anchor and *Big Brother* contestant, Kern Lima's 2021 memoir, *Believe IT,* was a *New York Times* bestseller for nine weeks.

61. RACHEL CARLSON

NEW

$500 million

SOURCE: **Education**

AGE: **32**

RESIDENCE: **Denver**

SELF-MADE SCORE: 8

In the struggle to attract and retain front-line workers, companies like Chipotle and Walmart rely on Guild Education, which Carlson founded in 2015, to create benefit programs to help employees get free degrees. In its latest funding round this spring, the company's valuation tripled to $3.75 billion. It was also a win for Guild's more than 1,000 employees, all of whom own shares (half of them have stakes worth at least $100,000).

61. YOUNG SOHN

$500 million ↓

SOURCE: **Software**

AGE: **63** • RESIDENCE: **New York City**

SELF-MADE SCORE: 8

Software veteran Sohn was a cofounder and served as a board member of life-sciences software firm Veeva Systems until 2014. She helped found cloud software firm Vlocity and was on its board until it was acquired by Salesforce for $1.3 billion in 2020. Her estimated net worth is lower this year due to new information about her Veeva Systems stake.

61. VERA WANG

$500 million ↑

SOURCE: **Fashion design**

AGE: **72** • RESIDENCE: **New York City**

SELF-MADE SCORE: 7

The iconic designer, known for her bridalwear, has dressed celebrities including Victoria Beckham, Kim Kardashian West and, more recently, Ariana Grande for her secret wedding to luxury realtor Dalton Gomez. This year, Wang is partnering with bridal brand Pronovias to launch an affordable line of wedding dresses. She is also tiptoeing into the alcohol business, debuting a Vera Wang Vodka and a Vera Wang Prosecco.

65. HUDA KATTAN

$490 million ↓

SOURCE: **Cosmetics**

AGE: **37** • RESIDENCE: **Dubai, U.A.E.**

SELF-MADE SCORE: 9

The chairwoman of $200 million (estimated 2020 revenue) Huda Beauty, which introduced a new skincare line in 2020, is now seeding other startups through a venture arm. In 2017, she sold a minority stake in Huda Beauty to private equity firm TSG Consumer Partners in a deal that valued the business at $1.2 billion.

66. KATHLEEN HILDRETH

$480 million ↑

SOURCE: **Airplane maintenance**

AGE: **59** • RESIDENCE: **Aubrey, TX**

SELF-MADE SCORE: 8

West Point grad Hildreth was deployed around the world as a helicopter and maintenance test pilot. As a service-disabled Army veteran, she cofounded defense contractor M1 Support Services in 2003 and helps run the company, which maintains military fighter jets such as F-15s. Revenue grew about 10% in 2020 to $1.1 billion.

66. SUSAN WAGNER

$480 million ↑

SOURCE: **Money management**

AGE: **60** • RESIDENCE: **Mount Kisco, NY**

SELF-MADE SCORE: 8

The longtime BlackRock executive, who helped cofound the investment behemoth in 1988, retired as vice chairman of the firm in 2012 but still sits on its board. She's also on the boards of Apple, Swiss Re, health-tech startup Color Health and Samsara, a Cloud 100 startup *(see page 58)* backed by Andreessen Horowitz and Tiger Global Management that makes sensors and software to manage commercial fleets and industrial operations.

68. DONNA KARAN

$475 million ↑

SOURCE: **Fashion**

AGE: **72** • RESIDENCE: **New York City**

SELF-MADE SCORE: 8

Karan sold her namesake fashion label to luxury-goods conglomerate LVMH for $195 million in 2000. Since then, she's focused on her lifestyle brand, Urban Zen, which combines fashion, philanthropy and art. This year, Karan also cofounded Urban Zen Integrative Therapy, a company that will integrate Eastern self-care practices with Western medicine.

69. CELINE DION

$460 million ↑

SOURCE: **Music**

AGE: **53** • RESIDENCE: **Las Vegas**

SELF-MADE SCORE: 8

The pandemic forced Dion to reschedule her world tour, which now is slated to kick off in March 2022. The Quebecois songstress will also return to Las Vegas in November, two years after her lucrative residency at Caesar's Palace ended, for a new 21-show residency at Resorts World.

69. JUDY SHEINDLIN

$460 million ↑

SOURCE: **TV**

AGE: **78**

RESIDENCE: **Naples, FL**

SELF-MADE SCORE: 8

After 25 years presiding over cable's most-watched courtroom—and more than 12,500 cases—Judge Judy is going digital. Her new series, *Judy Justice,* will be streamed exclusively on Amazon's free service IMDb TV next year. A longtime family-court judge, Sheindlin didn't make her debut on television until she was 53.

69. GWYNNE SHOTWELL

$460 million ↑

SOURCE: **SpaceX**

AGE: **57**

RESIDENCE: **Jonesboro, TX**

SELF-MADE SCORE: 6

Employee No. 11 at Elon Musk's SpaceX, Shotwell is president and chief operating officer of the commercial space exploration company. SpaceX raised $1.1 billion earlier this year, bringing its valuation to over $74 billion, to fund the development of its *Starship* spacecraft and its internet service, Starlink, which it reportedly began beta testing in October 2020. SpaceX will deliver billionaire Jared Isaacman and three crew members to orbit Earth possibly as soon as this September. Shotwell is estimated to own less than 1% of SpaceX.

SHOTWELL: JOHN SCIULLI/GETTY IMAGES

72. ADI TATARKO

$455 million ⬆
SOURCE: **Home design**
AGE: **48**
RESIDENCE: **Palo Alto, CA**
SELF-MADE SCORE: 8

Tatarko cofounded Houzz, a home goods and interior-design website, with her husband, Alon Cohen, in 2009. The company was forced to lay off 155 employees in April 2020 amid the pandemic. But demand for home remodels has since rebounded, with user outreach to home professionals on the site increasing by more than 50% compared to pre-Covid-19 levels.

73. BEYONCÉ KNOWLES

$440 million ⬆
SOURCE: **Music**
AGE: **39** • RESIDENCE: **Los Angeles**
SELF-MADE SCORE: 8

It has been five years since Knowles released her most recent solo album, but she's still racking up accolades. She took home Grammys this year for her performance of "Black Parade" and the music video for "Brown Skin Girl." Her collaboration with Adidas launched its first swimwear line this summer.

74. JANICE BRYANT HOWROYD

$435 million ⬆
SOURCE: **Staffing**
AGE: **68** • RESIDENCE: **Las Vegas**
SELF-MADE SCORE: 9

The founder and CEO of staffing firm Act-One Group voiced support in June for reparations to the descendants of slaves in America, saying diversity initiatives should carve out resources for Black people. Act-One, her four-decade-old multinational, was dealt a blow by the pandemic as temporary staffing needs contracted. Revenue in 2020 was down 11% to an estimated $890 million—better than analysts anticipated.

75. NICHOLE MUSTARD

$430 million ⬆
SOURCE: **Personal finance**
AGE: **48** • RESIDENCE: **Orinda, CA**
SELF-MADE SCORE: 9

A former financial planner, Mustard cofounded Credit Karma in 2007 with two others in an office above a San Francisco bar. Last December, tax planning giant Intuit paid $8.1 billion in cash and stock for the business. The site—which offers consumers access to credit scores and boasts more than 100 million members—operates as an independent brand under Intuit. Mustard continues to serve as its chief revenue officer.

76. KELLY STECKELBERG

$415 million ⬆
SOURCE: **Zoom Video Communications**
AGE: **54** • RESIDENCE: **San Jose, CA**
SELF-MADE SCORE: 6

The net worth of Zoom's chief financial officer has jumped by $160 million since last year's list, thanks largely to several well-timed stock sales as shares of the video-conferencing firm briefly soared above the $400 mark in September. She also joined the board of Utah-based cloud computing outfit Qualtrics in February after it was spun off by German software giant SAP.

76. BARBRA STREISAND

$415 million ⬆
SOURCE: **Music**
AGE: **79** • RESIDENCE: **Malibu, CA**
SELF-MADE SCORE: 10

Six decades in show business as a performer, writer and director have made Streisand a fortune, but she also made a shrewd real estate purchase. *Forbes* estimates that her sprawling Malibu complex—which has quintupled in value since she bought it in 1995—is worth nearly $100 million as real estate prices in the area have skyrocketed during the pandemic.

78. NORA ROBERTS

$410 million ⬆
SOURCE: **Books**
AGE: **70** • RESIDENCE: **Boonsboro, MD**
SELF-MADE SCORE: 8

Romance and crime novelist Roberts has published four new books since September 2020, and her sales are as robust as ever. She pulled in an estimated $26 million in pretax earnings over the past year, making her one of the highest-earning authors in the world.

79. CATHIE WOOD

$400 million ⬆
SOURCE: **Money management**
AGE: **65** • RESIDENCE: **Wilton, CT**
SELF-MADE SCORE: 8

Wood founded $60 billion (assets) Ark Invest—one of Wall Street's fastest-growing investment firms—in 2014 with the idea of packaging active investing inside exchange-traded funds. Her novel ETFs invest in genomics, robotics, AI, fintech and technology; in mid-2019 she upped her bet on Tesla before its stock soared more than tenfold. Ark has also filed to create a Bitcoin ETF. Wood's $23 billion flagship Ark Innovation ETF has returned an average of 46% annually over the past five years, nearly triple that of the S&P 500 Index.

80. DANIELLE STEEL

$390 million ⬆
SOURCE: **Books**
AGE: **73** • RESIDENCE: **San Francisco**
SELF-MADE SCORE: 7

Steel, the most prolific romance novelist after Nora Roberts *(No. 78),* published six novels in the past 10 months, making an estimated $18 million before taxes and management fees. Her earnings are boosted by her popularity overseas; she was the 15th-top-selling author in the U.K. in 2020, according to Nielsen Book Research.

81. LIZ ELTING

$380 million ⬆
SOURCE: **Translation services**
AGE: **55** • RESIDENCE: **New York City**
SELF-MADE SCORE: 8

Elting cofounded translation company TransPerfect in 1992. She left in 2018 after selling her stake for $385 million (pretax), ending a long-running battle with Phil Shawe, her cofounder and ex-fiancé. In May, Elting provided seed capital to a second group of life-sciences and deep-tech ventures as part of a $2 million gift to New York University's Endless Frontier Labs program, an incubator for promising startups.

82. ELLEN DEGENERES

$370 million ⬌
SOURCE: **Television**
AGE: **63** • RESIDENCE: **Santa Barbara, CA**
SELF-MADE SCORE: 8

The comedian and talk show host announced she would walk away from her eponymous program after its upcoming 19th season. While she claimed to be leaving because she wants a new challenge, the decision came after allegations that she presided over a toxic workplace. A drop in ratings and ad revenue followed; they are down about 13% and 20%, respectively.

82. SONIA GARDNER

$370 million ⬆
SOURCE: **Finance**
AGE: **59** • RESIDENCE: **New York City**
SELF-MADE SCORE: 8

A former attorney, Gardner cofounded investment firm Avenue Capital Group in 1995 with her brother Marc Lasry, the billionaire co-owner of U.S. National Basketball Association champion Milwaukee Bucks. She's president of the $11.6 billion (assets) distressed-debt enterprise. In November, the Morocco-born entrepreneur was named a goodwill ambassador to the U.N.'s capital development fund, focused on gender equality in finance.

TATARKO: ETHAN PINES

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

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84. BELINDA JOHNSON

$355 million ⬆
SOURCE: **Airbnb**
AGE: **54**
RESIDENCE: **Redwood City, CA**
SELF-MADE SCORE: 6

Back in 2011, Johnson was the first executive hire at Airbnb. This past December, nine months after she stepped down as chief operating officer—a post she had held for two years—the home-rental company went public. Johnson owns 0.3% of Airbnb's stock and still sits on the company's board, as well as Paypal's.

84. PLEASANT ROWLAND

$355 million ⬆
SOURCE: **American Girl dolls**
AGE: **80** • RESIDENCE: **Madison, WI**
SELF-MADE SCORE: 8

The American Girl dolls creator is notoriously press-shy, especially since her namesake Pleasant Company was snapped up by Mattel for $700 million more than two decades ago. Rowland was inducted into the Toy Industry Hall of Fame in October. Early this year, she donated $14 million to a charter school and $10 million to a hospital for a new transplant clinic, both in her hometown of Madison, Wisconsin.

86. DOLLY PARTON

NEW

$350 million
SOURCE: **Music**
AGE: **75** • RESIDENCE: **Nashville, TN**
SELF-MADE SCORE: 10

In a year when most of the music industry slowed down, the country singer and co-owner of amusement park Dollywood was busier than ever: She wrote a song inspired by her experience during the pandemic, released her first holiday album in 30 years and starred in a Netflix film, *Christmas on the Square.* Arguably her most important contribution: a $1 million donation that helped fund Moderna's coronavirus vaccine research.

87. PATRICIA MILLER

$325 million ⬆
SOURCE: **Accessories**
AGE: **82** • RESIDENCE: **Fort Wayne, IN**
SELF-MADE SCORE: 8

Miller is the cofounder of colorful accessories brand Vera Bradley, known for its quilted cotton handbags. She retired as president in 2019 and stepped down from the board; her husband, Michael Miller, retired as a board member in June. Since last year, the couple have sold roughly $23 million worth of the company's stock, reducing their stake from 16% to 9%.

87. LYNDA WEINMAN

$325 million ⬆
SOURCE: **Online education**
AGE: **66** • RESIDENCE: **Montecito, CA**
SELF-MADE SCORE: 8

Web-design teacher Weinman sold Lynda.com, an online-learning website, to LinkedIn in 2015 for $1.5 billion in cash and stock—and left before Microsoft purchased LinkedIn the following year. She has co-produced more than 20 independent films, including the 2020 Netflix documentary *The Social Dilemma,* about the dangers of social media. Weinman's latest endeavor is 3D-printed pottery.

89. RUTH PORAT

$310 million ⬆
SOURCE: **Google**
AGE: **63**
RESIDENCE: **Palo Alto, CA**
SELF-MADE SCORE: 6

After a 27-year career at Morgan Stanley, Porat joined Google in mid-2015, shortly before it created its parent company, Alphabet, where she serves as chief financial officer. During the pandemic, Porat has become a proponent of hybrid offices. She recently endorsed U.S. President Joe Biden's plan for higher taxes on high earners, saying, "We need to do our part."

90. KARISSA BODNAR

$300 million ⬇
SOURCE: **Cosmetics**
AGE: **32** • RESIDENCE: **Los Angeles**
SELF-MADE SCORE: 9

Direct-to-consumer cosmetics company Thrive Causemetics was better equipped than most to weather the worst of the pandemic. Now Bodnar, who previously worked at L'Oréal before leaving to launch Thrive in 2015, is reportedly shopping around for a sale.

91. JESSICA ICLISOY

$290 million ⬌
SOURCE: **Baby products**
AGE: **55** • RESIDENCE: **Los Angeles**
SELF-MADE SCORE: 8

California Baby's hand sanitizer and soap, made in Iclisoy's plant in Los Angeles, sold quickly during the height of the pandemic. She founded the company in 1995 as a shampoo and bath brand with products that are free of harsh chemicals, dyes and synthetic fragrances and not tested on animals. She later expanded to produce sunscreens and lotions made with Calendula from her 40-hectare farm in Santa Barbara. Iclisoy owns 100% of the $100 million (estimated sales) business.

91. INDRA NOOYI

NEW

$290 million
SOURCE: **PepsiCo**
AGE: **65** • RESIDENCE: **Greenwich, CT**
SELF-MADE SCORE: 6

The India-born executive served as CEO and chair of PepsiCo for 12 years before stepping down as CEO in 2018 and chair in 2019; her fortune stems from stock she was granted while working there. During her tenure, she thwarted a bid to break up the company, nearly doubled sales to $65 billion and introduced healthier products and environmentally friendly practices. She joined Amazon's board in 2019.

93. SARAH FRIAR

$265 million ⬆
SOURCE: **Mobile payments**
AGE: **48** • RESIDENCE: **Ross, CA**
SELF-MADE SCORE: 6

Friar is taking Nextdoor public in a SPAC merger expected to value the neighborhood social network at $4.3 billion. Nextdoor isn't profitable, but revenue has more than doubled during her time as CEO. To address ongoing issues with racial profiling, the company introduced an anti-racism notification in April that warns users when their post might be discriminatory.

94. TONI KO

$260 million ⬆
SOURCE: **Cosmetics**
AGE: **48** • RESIDENCE: **Los Angeles**
SELF-MADE SCORE: 9

Ko made waves in the beauty industry when she sold her affordable-makeup company, NYX Cosmetics, to L'Oréal for $500 million in 2014. A serial entrepreneur, she founded Bespoke Beauty Brands in 2019. It helps influencers and celebrities create their own makeup lines. Bespoke partnered with designer Jason Wu to develop Jason Wu Beauty, which launched earlier this year.

95. LYNN JURICH

NEW

$250 million
SOURCE: **Residential solar energy**
AGE: **42**
RESIDENCE: **San Francisco**
SELF-MADE SCORE: 8

Jurich cofounded residential solar pioneer Sunrun in 2007 at age 27 with Stanford business school classmate Ed Fenster. She is CEO and owns roughly 2% of Sunrun, which went public in 2015. The stock more than doubled in the past year due to soaring demand for solar panels. Her husband, Brad Murray, cofounded a cosmetics company that Unilever acquired in 2019.

JURICH: ERIC MILLETTE FOR FORBES

CHANGE IN WEALTH KEY: ⬆ UP ⬇ DOWN ⬌ UNCHANGED • SELF-MADE SCORE: 6 7 8 9 10

95. THERESA PAN

$250 million ⬌

SOURCE: **Fiber optics**

AGE: **75** • RESIDENCE: **Milpitas, CA**

SELF-MADE SCORE: 8

Pan and her then-husband, Jing Jong Pan, became billionaires when her fiber-optic components firm, E-Tek Dynamic—which she cofounded in 1983—was acquired by fiber-optics company JDS Uniphase in a $15 billion transaction in 2000. They dropped out of the three-comma club by 2001 as JDS shares declined. Pan heads a foundation that builds and renovates rural schools in China.

97. GAIL BECKER

NEW

$245 million

SOURCE: **Specialty foods**

AGE: **57**

RESIDENCE: **Los Angeles**

SELF-MADE SCORE: 8

The pioneer of the cauliflower pizza crust craze, Becker originally took to the kitchen to make gluten-free versions of her kids' favorite foods after they were diagnosed with celiac disease. A longtime public-relations executive, she founded Caulipower in 2016 and got early funding from venture firm Boulder Food Group. Caulipower has estimated revenue of $100 million, with products in 25,000 stores including Walmart and Target.

98. SERENA WILLIAMS

$240 million ⬆

SOURCE: **Tennis, investments**

AGE: **39** • RESIDENCE: **Jupiter, FL**

SELF-MADE SCORE: 9

The tennis star has been stuck on 23 Grand Slam singles titles since 2017 but remains a draw for advertisers, with nearly 20 corporate partners. She's much more than a pitchwoman: In the last eight months, she has signed a first-look TV deal with Amazon Studios and picked up a board seat with a SPAC now taking 3D-printing company Velo3D public. She also has investments in 66 startups.

99. LINDA ALVARADO

NEW

$230 million

SOURCE: **Construction, franchises**

AGE: **70**

RESIDENCE: **Denver**

SELF-MADE SCORE: 10

Alvarado has spent more than four decades in construction. Her Denver-based firm, Alvarado Construction, which she founded in 1976, led the building of U.S. football team Denver Broncos' Mile High Stadium and the Colorado Convention Center. She and her husband have funneled the profits into more than 250 fast-food franchises—mostly Taco Bells—in seven states. In 1991 she received a minority stake in Major League Baseball's Colorado Rockies, whose Coors Field was the site of this year's All-Star game.

Cindy Crawford

100. CINDY CRAWFORD ⬆

NEW

$225 million

SOURCE: **Skin care**

AGE: **55** • RESIDENCE: **Malibu, CA**

SELF-MADE SCORE: 8

After making her name as a supermodel during the 1980s and '90s, when she appeared on more than 1,000 magazine covers and shilled for a number of brands including Revlon and Pepsi, Crawford decided to be the face of her own product. The model turned entrepreneur founded the anti-aging skin-care company Meaningful Beauty in 2004. The direct-to-consumer line generates more than $100 million in annual revenue, thanks in part to infomercial marketing and Crawford's famous face. Crawford, who *Forbes* recently confirmed owns half the company, launched Meaningful Beauty hair care in June. F

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METHODOLOGY: To compile net worths, we valued individual assets including stakes in public companies using stock prices from July 2, 2021. We valued private companies by consulting with outside experts and conservatively comparing them with public companies. To be eligible for the list, women have to have substantially made their own fortunes in the U.S. and/or be U.S. citizens or permanent residents. While none inherited their wealth, some climbed farther and overcame more obstacles to get into the ranks. To measure just how far some have come, women are given a self-made score of 6 (hired hand) to 10 (rags-to-riches entrepreneur). We attempted to vet numbers with all list entrants. Some cooperated, others didn't. Ages are as of August 5, 2021. For more information, including details on the self-made scores, see **forbes.com/self-made-women**.

ACKNOWLEDGMENTS: AlphaSense; Matt Bittick, CBRE; John Gafford, The Simply Group; MRC Data; The NPD Group; Joel Paige, Kingsmill Resort; PitchBook; Jack Plunkett, Plunkett Research

ALVARADO: THEO STROOMER FOR FORBES

Honor

"The respect that is only bought by gold is not worth much."
—George Colman

"A man has honor if he holds himself to an ideal of conduct though it is inconvenient, unprofitable, or dangerous to do so."
—Walter Lippman

"No man should break his word of honor."
—Mikhail Bulgakov

"Honor is easier kept than recovered."
—Saying

"The louder he talked of his honor, the faster we counted our spoons."
—Ralph Waldo Emerson

"The more cost, the more honor."
—Scottish proverb

"He that desires honor is not worthy."
—English proverb

"Who sows virtue reaps honor."
—Leonardo Da Vinci

"War, he sung, is toil and trouble; Honor, but an empty bubble."
—John Dryden

"I hope I shall always possess firmness and virtue enough to maintain. . . the most enviable of all titles, the character of an 'Honest Man.'"
—George Washington

"Honor lies in honest toil."
—Grover Cleveland

"For I remembered your old Roman axiom, the more the danger, still the more the honor."
—John Fletcher

'PROJECTS GUY' PITFALLS IN CHINA
DAVID ROCHE FINANCE FRACTURES FACTORIES
WHY SOME PEOPLE SURVIVE CANCER
Forbes Asia
Japan's 40 Richest
Take Some Comfort
NEW NO. 1 TADASHI YANAI'S UNIQLO IS AMONG A FEW RETAILERS BEATING FIERCE RECESSION

Store of Value

March 2, 2009

In 2009, Tadashi Yanai had seen his net worth jump to $6.1 billion from $4.4 billion in 2006, despite a severe global recession hitting other tycoons that year. That figure made him Japan's richest man at the time. Yanai, the founder of Japan's Fast Retailing, which operates the global retailer Uniqlo, had actually benefitted from the worldwide downturn as consumers pinched pennies buying Uniqlo's more affordable, but still fashionable, duds. A similar cost-cutting trend is also helping Yanai during the current pandemic. Back in 2009, Yanai was hoping to hit $7 billion revenue—it's now expected to reach $19.5 billion in fiscal 2021. His net worth stands at $33.7 billion—up more than fivefold in a dozen years, and once again making him Japan's richest man, according to Forbes' real-time wealth ranking on Sept. 1.

EXCERPTS EDITED BY LYDIA FORBES.

"Honor has not to be won; it must only not be lost."
—Arthur Schopenhauer

"Let the honor of thy fellow be as dear to thee as thine own."
—Talmud

"The reward of a thing well done is to have done it."
—Ralph Waldo Emerson

"Honor wears different coats to different eyes."
—Barbara W. Tuchman

"Bullfighting is the only art in which the artist is in danger of death, and in which the degree of brilliance in the performance is left to the fighter's honor."
—Ernest Hemingway

"Riches are for spending; and spending for honor and good actions."
—Francis Bacon

"You can't build a reputation on what you are going to do."
—Henry Ford

FINAL THOUGHT

"Honors are easier had than honor."
—Malcolm Forbes

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